

# **ECON 5305: Applied Mathematical Economics**

CRN: 18993

Fall 2021

## **Course Meeting Information**

Thursdays, 6:00pm to 8:50pm

BUSN 304

## **Professor Information**

Dr. Daniel Pastor

243 COBA

djpastor@utep.edu

Office hours: Tuesdays and Thursdays, 1:30pm-2:30pm

## **Course Information: What this class is about and what we will do**

### **COURSE DESCRIPTION**

The course is required for the Master's of Science in Economics program. Students must pass this course with a B or better in order to continue in the program.

This is a course in mathematical methods for economists. It is expected that students have taken calculus and are comfortable with derivatives, as well as intermediate economic theory. The language of mathematics will be used to describe situations that occur in economics, finance, and business. Mathematical modeling is an important tool in economics, finance, business, and management. Mathematics enables us to solve problems that cannot be effectively solved in other ways.

### **COURSE OBJECTIVES OR EXPECTED LEARNING OUTCOMES**

At the end of this course, students will be able to:

- Understand mathematical models as they relate to Economic problems
- Solve linear systems of equations using matrix algebra
- Perform comparative static analysis
- Apply optimization to economic problems

### **LEARNING MODULES**

This course is designed using a modular format—that is, each week is “packaged” as a single module so that all the materials and lecture notes are in one area for a given week. Each module will be available on the Blackboard home page for this course.

### **REQUIRED MATERIALS**

*Fundamental Methods of Mathematical Economics*, 4<sup>th</sup> ed., By Chiang and Wainwright, McGraw-Hill, 2005. ISBN-13: 978-0070109100

## COURSE ASSIGNMENTS AND GRADING

**Problem Sets:** There will be problems assigned each week. The problems are to be used to check your understanding of the material and to help you work through some of the technical issues in this course. The assignments will be available on Blackboard and must be submitted in class at the due date. I will accept emailed submissions as long as they are received before the end of class on the due date – 8:50pm.

I strongly urge the students to use all the problems as preparation for the exams. Mathematics cannot be learned passively and the problem sets are a part of active learning.

**Exams:** There will be two exams: One midterm and one final. Due to its comprehensive nature, the final exam requires the students to have knowledge from previous chapters. Mathematics is cumulative by nature, and the final exam is cumulative as well. If you get behind or have difficulty early on, do not delay getting help or you will have more difficulty as the course proceeds.

Grade Distribution:

100-90 = A	89-80 = B	79-70 = C	69-60 = D	59 and Below = F
○ Problem Sets:	30%			
○ Midterm:	35%			
○ Final Exam:	35%			

**Evaluation Criteria:** There are no exceptions to the grading policy. I sympathize with students who are close to the cutoff for the next higher grade; however, it is unfair to others to give special consideration to any student.

## TENTATIVE OUTLINE

- Chapter 2: Economic Models
- Chapter 3: Equilibrium Analysis in Economics
- Chapter 4: Linear Models and Matrix Algebra
- Chapter 5: Linear Models and Matrix Algebra (continued)
- Chapter 6: Comparative Statics and the Concept of the Derivative
- Chapter 7: Rules of Differentiation and Their Use in Comparative Statics
- Chapter 8: Comparative Static Analysis of General Function Models
- Chapter 9: Optimization: A special Variety of Equilibrium Analysis
- Chapter 10: Exponential and Logarithmic Functions
- Chapter 11: The Case of More Than One Choice Variable
- Chapter 12: Optimization with Equality Constraints

**Midterm Date: Thursday, October 14, 2021**

**Final Exam Date: Thursday, December 9 from 7:00pm – 9:45pm**

## Other Key Dates:

October 29: Drop deadline  
November 25-26: Thanksgiving  
December 2: Last day of classes

## TECHNOLOGY REQUIREMENTS

Course assignments are delivered 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.

**IMPORTANT:** If you encounter technical difficulties beyond your scope of troubleshooting, please contact the UTEP [Help Desk](#) as they are trained specifically in assisting with technological 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!

### **Course Communication: How we will stay in contact with each other**

- **Office Hours:** My office hours will be held on Tuesdays and Thursdays from 1:30pm - 2:30 pm in 243 COBA.
- **Email:** UTEP e-mail is the best way to contact me. I will make every attempt to respond to your e-mail within 24-48 hours of receipt. When e-mailing me, be sure to email from your UTEP student account and please put the course number in the subject line. In the body of your e-mail, clearly state your question. At the end of your e-mail, be sure to put your first and last name, and your university identification number. A note about emailing questions. You are required to read and be familiar with the contents of the syllabus. If you do not understand something, please ask. However, if the answer is clearly provided, whether in the syllabus, Blackboard announcements, or some other information with which you have been provided, then do not expect an answer to your email. That means if you email me about the date of a midterm, the grading scale, if extra credit is provided, etc., then I will not respond because that information is clearly provided to you. Please check your resources before emailing your questions.
- **Announcements:** Check the Blackboard announcements frequently for any updates, deadlines, or other important messages.

## 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.

- Always consider 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 will be tolerated.
- When reacting to someone else's message, address the ideas, not the person. Post only what anyone would comfortably state in a face-to-face situation.
- Blackboard is not a public internet venue; all postings to it should be considered private and confidential. Whatever is posted on in these online spaces is intended for classmates and professor only. Please do not copy documents and paste them to a publicly accessible website, blog, or other space.

## **Course Policies: What do you need to do to be successful in the course**

### **EXCUSED ABSENCES AND/OR COURSE DROP POLICY**

I will not drop you from the course. However, if you feel that you are unable to complete the course successfully, please let me know and then contact the Registrar's Office to initiate the drop process. If you do not, you are at risk of receiving an "F" for the course.

### **DEADLINES, LATE WORK, AND ABSENCE POLICY**

All assignments will have a due date when assigned. The due dates are not flexible and no late work will be accepted without an acceptable excuse.

### **MAKE-UP WORK**

Make-up work will be given *only* in the case of a *documented* emergency. Note that make-up work may be in a different format than the original work, may require more intensive preparation, and may be graded with penalty points. If you miss an assignment and the reason is not considered excusable, you will receive a zero. It is therefore important to reach out to me—in advance if at all possible—and explain with proper documentation why you missed a given course requirement. Once a deadline has been established for make-up work, no further extensions or exceptions will be granted.

### **INCOMPLETE GRADE POLICY**

Incomplete grades may be requested only in exceptional circumstances after you have completed at least half of the course requirements. Talk to me immediately if you believe an incomplete is warranted. If granted, we will establish a contract of work to be completed with deadlines. The student must have a reasonable chance of passing the course in order to be considered for an incomplete. An incomplete will not be granted in order to avoid failing the course.

## CLASS ETIQUETTE

I will make every effort to begin class promptly and end class on time. If you arrive late/leave early, please make every effort to do so quietly. Out of consideration for your classmates and the instructor, please refrain from talking with your neighbors or eating during class.

No electronic devices will be allowed during exams. Cell phones, iPods, other devices, etc., must be turned off. **Only standard calculators (e.g. TI-86) will be allowed during exams. No other type of calculators will be allowed.** If you have any questions about what's allowed, please see me.

**Please make sure your cell phones and other electronic devices are turned off while you're in class.**

## CAMPUS CARRY

Persons who hold a Concealed Handgun License can lawfully carry their gun into a UTEP classroom as long as it remains concealed. Open carry remains prohibited on campus. Should you feel someone is intentionally displaying a gun (or any other weapon for that matter), do not hesitate to call Campus Police (X 5611) or 9-1-1. For more information on campus carry, see [Campus Carry \(utep.edu\)](http://www.utep.edu/campus-carry).

## ACCOMMODATIONS POLICY

The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other beneficiaries of University programs, services and activities with documented disabilities in order to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. Reasonable accommodations will be made unless it is determined that doing so would cause undue hardship on the University. Students requesting an accommodation based on a disability must register with the [UTEP Center for Accommodations and Support Services \(CASS\)](http://www.utep.edu/cass). Contact the Center for Accommodations and Support Services at 915-747-5148, or email them at [cass@utep.edu](mailto:cass@utep.edu), or apply for accommodations online via the [CASS portal](http://www.utep.edu/cass).

## SCHOLASTIC INTEGRITY

Academic dishonesty is prohibited and is considered a violation of the UTEP Handbook of Operating Procedures. It includes, but is not limited to, cheating, plagiarism, and collusion. Cheating may involve copying from or providing information to another student, possessing unauthorized materials during a test, or falsifying research data on laboratory reports. Plagiarism occurs when someone intentionally or knowingly represents the words or ideas of another as ones' own. Collusion involves collaborating with another person to commit any academically dishonest act. Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. All suspected violations of academic integrity at The University of Texas at El Paso must be

reported to the Office of Student Conduct and Conflict Resolution (OSCCR) for possible disciplinary action. To learn more, please visit HOOP: Student Conduct and Discipline.

### **COPYRIGHT STATEMENT FOR COURSE MATERIALS**

All materials used in this course are protected by copyright law. The course materials are only for the use of students currently enrolled in this course and only for the purpose of this course. They may not be further disseminated.

### **Course Resources: Where you can go for assistance**

If you have tested positive for COVID-19, you are encouraged to report your results to [covidaction@utep.edu](mailto:covidaction@utep.edu), so that the Dean of Students Office can provide you with support and help with communication with your professors. It is important to follow all instructions that you receive as part of the diagnosis, including isolation and staying at home until a negative test is produced.

If you experience COVID-19 symptoms, please follow the isolation protocol by staying at home and getting tested as soon as possible. If the test is negative but you are still seeking accommodations, please contact the Dean of Students Office for guidance in a timely manner. Your instructor will work with the Dean of Students Office to determine the extent of any such accommodations.

We strongly encourage you to think and act proactively in all matters related to COVID-19 and your academic endeavors. The Center for Disease Control and Prevention recommends that people in areas of substantial or high COVID-19 transmission wear face masks when indoors in groups of people. The best way that Miners can take care of miners is to get the vaccine. If you still need the vaccine, it is widely available in the El Paso area, and will be available at no charge on campus during the first week of classes. For more information about the current rates, testing, and vaccinations, please visit [epstrong.org](http://epstrong.org).

UTEP provides a variety of student services and support:

#### Technology Resources

- Help Desk: Students experiencing technological challenges (email, Blackboard, software, etc.) can submit a ticket to the UTEP Helpdesk for assistance. Contact the Helpdesk via phone, email, chat, website, or in person if on campus.

#### Academic Resources

- UTEP Library: Access a wide range of resources including online, full-text access to thousands of journals and eBooks plus reference service and librarian assistance for enrolled students.
- University Writing Center (UWC): Submit papers here for assistance with writing style and formatting, ask a tutor for help and explore other writing resources.
- Math Tutoring Center (MaRCS): Ask a tutor for help and explore other available math resources.

## Individual Resources

- Military Student Success Center: Assists personnel in any branch of service to reach their educational goals.
- Center for Accommodations and Support Services: Assists students with ADA-related accommodations for coursework, housing, and internships.
- Counseling and Psychological Services: Provides a variety of counseling services including individual, couples, and group sessions as well as career and disability assessments.