

ECON 300 **Methods and Tools of Economic Analysis**

Course Description: The methodology of economics employs mathematical and logical tools to model and analyze markets, national economies, and other situations where people make choices. Understanding of many economic issues can be enhanced by careful application of the methodology, and this in turn requires an understanding of the various mathematical and logical techniques. The course reviews concepts and techniques usually covered in algebra, analytical geometry, and the first semester of calculus. It also introduces the components of subsequent calculus and linear algebra courses most relevant to economic analysis. The reasons why economists use mathematical concepts and techniques to model behavior and outcomes are emphasized throughout.

The course will meet three times a week, twice for lectures and once in discussion section conducted by a teaching assistant. Lectures will expand on material covered in the text, stressing the reasons why economists use math and providing additional explanation of formal mathematical logic. Discussion sections will demonstrate solutions for problems, answer questions about material presented in the lectures or book, and focus on preparing students for exams. Students should be prepared to devote 3-4 hours per week outside class meetings, primarily working on problem sets as well as reading and reviewing the text, additional reading assignments, and class notes.

Course Objectives: Each student should be able by the end of the semester to:

- Recognize and use the mathematical terminology and notation typically employed by economists
- Explain how specific mathematical functions can be used to provide formal methods of describing the linkages between key economic variables
- Employ the mathematical techniques covered in the course to solve economic problems and/or predict economic behavior
- Explain how mathematical concepts enable economists to analyze complicated problems and generate testable hypotheses

Pre-requisites: You are responsible for having completed three courses (or their transfer equivalents) with grades of C- or better **before** taking this course, including: ECON 200 (Principles of Microeconomics), ECON 201 (Principles of Macroeconomics) and either MATH 220 (Elementary Calculus I) or MATH 140 (Calculus I). If you have already taken MATH 141, you should talk with the instructor or a departmental advisor as soon as possible to ascertain if you should complete ECON 300 or go on to take MATH 241. If you need help with basic math, please take advantage of the Math Success Program (www.resnet.umd.edu/programs/math_success).

Lectures: TuTh 11:00am - 11:50am ARM 0135

Instructor's Contact Information

Professor Erkut Ozbay, ozbay@umd.edu, Tydings 4101B, 301 405 3481
Office hours Th 12:00 -1:00pm (by appointment)

TAs' Contact Information and Office Hours

Prateik Dalmia dalmia@econ.umd.edu (M 11:00am-1:00pm)

Yi Zhao zhao@econ.umd.edu (TH 12:30pm-2:30pm)

Tutoring:

To connect with a complimentary, peer tutor for this course, sign up directly at <https://umdtutoring.mywconline.com/>. For questions, contact Christine Duchouquette, Tutorial Coordinator for the Academic Achievement Programs (AAP) at cduchou@umd.edu or 301-405-4745."

Discussion Sections: Each student is registered for a specific section of the course as listed below.

0101	F 9-9:50	SQH 1105
0102	F 12-12:50	TYD 0101
0103	F 10-10:50	KEY 0125
0104	F 9-9:50	TYD 1108
0105	F 10-10:50	KEY 0116
0106	F 12-12:50	TYD 0102

Course Website: <http://elms.umd.edu> If you are registered for this course, you can use your directory ID and password to access copies of this syllabus, study guides that will be handed out during the semester, correct answers for exams, and your grades. All materials posted on the website are made available only for your use in this course. You may not reproduce or distribute course materials or make any commercial use without express written consent of the instructor. Students who sell or distribute copies of course materials may be considered in violation of the University Code of Student conduct.

Email: The University has adopted email as the primary means of communication outside the classroom. Students are responsible for updating their current email address via the appropriate link on <http://www.testudo.umd.edu/Registrar.html> New information about the course will be distributed to you via email as well as announcements on the course website.

Textbook: **Recommended, not required**

Calculator: You will need a calculator to use for problem sets and exams. In addition to standard functions, your calculator must have functions for general exponents, logs, and the exponential function. More sophisticated calculators, such as graphing calculators, may be useful, but note that wireless enabled devices, cell-phones, and programmable calculators cannot be used during exams.

Problem Sets: Problem sets are to be handed in hard copy on the date due. If for some reason you cannot hand it in at that time, please put it in the *mailbox of your TA*. TA mailboxes are in the Econ Dept office, Tydings 3114. Late problem sets will not be accepted. Answers will be posted on the course website shortly after discussion section ends, which is why late submissions will not be accepted. The problem set with the lowest score will be dropped. Thus, you should not worry if an emergency, illness, or other matter prevents you from turning in one problem set when due—just be sure to hand in the others.

Expectations of Students: You are expected to attend lecture and discussion section regularly, fully utilize the text book and other course materials, complete problem sets on time, and every week check the course website for updated information. You are expected to read the assigned chapters and reading materials **before** class. Research shows that students who actively participate in class tend to learn significantly more than those who only passively listen. You should ask questions, articulate your ideas and concerns out loud, and if you find that you can't follow the logic of lectures, please visit office hours **before** exams and due dates for assignments.

Students with learning disabilities should get in touch with their assigned TAs as soon as possible.

Grades and Assignments: Your grade will be determined by your performance on the following assignments, weighted as indicated.

*Department of Economics' policy on grading requires instructors to use the grading system announced at the beginning of the semester in all cases. **We cannot make any exceptions to that rule. There will be no opportunity for extra credit after the semester ends.***

Problem Sets	20%
First Midterm exam	25%
Second Midterm exam	25%
Final exam	30%
Total	100%

Exams: The first midterm is scheduled for October 6. The second midterm is scheduled for November 3. The final exam will be cumulative and is scheduled for Dec 14, 8:00am-10:00a.

Legal Excuses for Missing an Exam: If you anticipate missing an exam because of a religious observance or participation in University activities at the request of a University official, you must inform your TA within the first three weeks of the semester. If you miss an exam because of illness that can be documented by a medical professional, you must inform your TA as soon as possible, preferably in advance of the exam, and a make-up exam will be scheduled. If you miss a midterm exam for any other reason, then you can take a make-up at a time selected by your TA, and you will automatically lose 25% of the maximum points possible for that exam. If you fail to show up for the make-up, then you will earn a zero for that exam. If you miss the final exam without a valid excuse, the 25%-deduction make-up option does not apply, and your score will be a zero. Note: make-up exams are not given for students whose travel plans conflict with the date of the scheduled final.

Academic Integrity: The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards applicable to all undergraduate students, and you are responsible for upholding these standards as you complete assignments and take exams in this course. Please make yourself aware of the consequences of cheating, fabrication, and plagiarism. For more information see www.studenthonorcouncil.umd.edu

Tentative Schedule of Lectures, Exams, and Due Dates – watch email/course website for updates!

Some additional readings not listed below will be assigned during class and posted on the class website. Not all material from the text will be covered on the exams; in contrast, all material covered in lectures and discussion sections should be considered “testable”.

An Introduction to Functions
More on Functions
Exponential Functions
Logarithmic Functions
Systems of Equations and Comparative Statics

Basics of Differential Calculus
More on Differential Calculus
Univariate Calculus
Elasticity

Multivariate Calculus
More on Multivariate Calculus
Extreme Values of Univariate Functions
Extreme Values of Multivariate Functions

Constrained Optimization
More on Constrained Optimization
More on Constrained Optimization

Probability
Decision making under Uncertainty
Risk Theory
Game Theory