

# ECO300 : Methods and Tools of Economic Analysis SPRING 2016 SYLLABUS

University of Maryland  
Department of Economics

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<b>Dr. Montgomery Office Hours:</b>	Mon 1230-230, Thr 1100-1230 and by appointment.		
<b>Course Meetings:</b>	MW 3:00-4:00	SHM 2102	
	Friday Discussion section (check your schedule)		

## 1 Course Description

Many modern applications of economics use mathematical, logical and statistical tools to model and analyze individual behavior, markets and economies. Intermediate and upper level undergraduate economics courses frequently utilize these tools and the Department wants to ensure all students are adequately prepared. You will begin to see how mathematical concepts and techniques are applied to thinking about economic behavior and outcomes.

The goal of this course is provide students with the mathematical tools used in economic analysis. By the end of the semester, students should have a mastery of:

- Basic algebraic and graphic techniques
- Optimization of univariate functions
- Optimization of multivariate functions
- Constrained Optimization and its use as a foundational tool for microeconomic theory
- An understanding of logarithmic and exponential functions and their economic applications
- A working understanding of integration, matrices and differential equations and how they are used in economic analysis

The Department requires three courses or their equivalents) with grades of C- or better before taking this course. They are ECON200 (Principles of Microeconomics), ECON201 (Principles of Macroeconomics), and either MATH220 (Elementary Calculus) or MATH140 (Calculus I). *Students who have taken additional calculus work such as MATH141 or higher should talk with a departmental advisor to determine the best course for you in case you are eligible for a waiver.* I do not have the ability to do so myself.

This course meets twice a week for a class session with the professor and a third time in a discussion section with a teaching assistant. Class session will explore the various tools you are being asked to master and explain their significance within economics. Discussion sections will follow up with additional instruction, answering additional questions you may have, and providing further examples. Students' time required for this class varies considerably based on your prior math coursework. Most importantly, the time will be based on how long since your most recent math course. Students with weak math skills or for whom it has been many years since they've practiced the application of mathematical tools may require additional investment of time to keep up with the material.

There are some changes this semester that are being implemented to better prepare students for upper level B.S. coursework and avoid duplication in other classes. There will no longer be probability or game theory and instead, additional topics such as matrices, linear algebra and integration will be covered.

## 2 Textbook

The primary textbook we will be utilizing is *Maths for Economics* by Geoff Renshaw. This is a UK-published book, so you may encounter the occasional Britishisms (such as currency in pounds sterling), but I have found this to be one of the best textbooks to incorporate several, understandable, economic applications of the material. It is also cheaper than textbooks used in this course in the past. I may also assign other readings, posted online, from other textbooks or articles. I will be clear what you should be reading ahead of time, if it is not on the syllabus. You are only responsible for material covered in class or discussion sections. It is expected that you will have done the readings before class to help you follow the lecture and ask questions in class.

I have also ordered *Schaum's Outlines of Introduction to Mathematical Economics* from the bookstore as there are usually frequent requests for additional practice problems. I have found this to be the most cost-effective source for additional material. IT IS NOT REQUIRED AND I WILL NOT USE IT IN CLASS/PROBLEM SETS.

Additionally, WolframAlpha has a useful app for solving and graphing equations to help check your work. There are free web, iOS, and Android versions as well as paid versions of each. I would recommend exploring the differences between the two and seeing if, based on your skill level, it is something that you would find useful.

## 3 Coursework & Grades

You are expected to turn in six problem sets. Problem sets are graded on a 2 point scale with the lowest one dropped. In addition, there will be two quizzes, a midterm and a cumulative final exam. The content of the final will weigh more heavily on the material after the midterm.

Problem Sets	10%
Quiz #1* (Wed Feb 10)	10%
Quiz #2* (Wed Apr 20)	15%
Midterm* (Wed Mar 9)	30%
Final Exam* (Sat May 14th 1:30pm)	35%
*Major Scheduled Grading Event	
Snow day makeups are in discussion section.	

### Problem Sets

There will be six problem sets which will provide you with an opportunity to apply the materials developed in lecture and discussion sections. Problem Sets will be posted on ELMS and their due dates can be found on the course schedule. Problem sets are to be handed **in hard copy** to your TA in class on the due date or turned in to the labeled bin right inside the main ECON office (TYD3114) no later than Noon. Late problem sets are not accepted for any reason, as answers will be posted on ELMS shortly after the discussion sections end. You may drop one problem set score; as such, extensions will not be granted for minor emergencies or illnesses. If you will miss a discussion section with a problem set due to a University-approved reason, please contact Professor Montgomery *before the due date* for instructions on how to turn it in early or to receive other accommodations, depending on the circumstances. Note, these problem sets should be performed *in addition to* the problems at the end of the textbook chapters, Schaum's practice problems and sample exams for adequate exam preparation.

### Quizzes and Exams

There are two quizzes, a midterm exam, and a final. Quizzes will begin at the beginning of class, but will not last the entire 50 minutes. Please read the full set of [Exam and Grading Policies](#) on ELMS.

## 4 Other Class Policies

- Per policy of the University and Professor, email and ELMS messaging are the primary means of communication outside the classroom. *I actually do not know know your email address* unless you email me first, so any messages I send will likely be via ELMS. Announcements will be made to ELMS. It is the students' responsibility to either have ELMS announcements/messages forwarded to their email or check ELMS on a daily basis.
- Economic concepts can be quite difficult at times and the nuance sometimes cannot be fully developed in the text. It is our job to help you understand the material. Please feel free to stop me at any point and ask questions in class either to ask for clarification, or if you think you may have a good idea for an application for the material. If something is confusing to you, it is VERY likely confusing to others in the class as well. Articulating your questions aloud is the best way you will get them answered. In addition to Professor and Teaching Assistant office hours, Academic Success and Tutorial Services will be providing peer tutoring services for this class. More information about the service will be provided during the first week.
- It is expected that you will attend every class, including discussion sections, and be on time. Discussion sections may be used to cover material not covered in lecture. Readings should be performed before class. Please be sure to visit office hours BEFORE exams and problem set due dates if you are having trouble.
- Electronic devices are not permitted in class except with permission from the instructor. ONLY non-graphing, non-communicative calculators are permitted for exams.
- **Academic Honesty**  
All materials handed to us for evaluation are expected to be your work and your work alone. Such material must adhere to the University's Code of Academic Integrity. We will not give credit to assignments sets that are clearly instances of copying work of your fellow student or any work that represents plagiarism. Any instances of academic dishonesty or cheating on exams will be referred to the Student Honor Council as per University policy. You are responsible for reading and understanding the University's policies as written in the course catalog.
- **Classroom Etiquette**  
Please arrive on time to lecture with your cell phones and other electronic devices on silent mode and stowed away. Believe it or not, students looking down at their cell phone in their lap is EXTREMELY distracting for instructors. If you need to leave the room for some reason, please do so as quietly and as least disruptive as possible. I reserve the right to remove any student from the classroom who fails to be respectful towards myself or their fellow students.
- **Accomodations**  
If you have the right for accommodation for class or exams due to a religious observance or disability (or any other reason), please do not hesitate to contact Professor Montgomery during the first three weeks of class. It is the student's responsibility to discuss exam scheduling and provide the proper documentation well before the quiz or exam. *Failure to do so can lead to a forfeiture of your accommodation.*

By Feb 8, please acknowledge you have read the policies laid out in the syllabus AND the [Exam and Grading Policies page](#) on ELMS by typing in "YES" in the [appropriate assignment submission](#). Failure to do so can lead to you being dropped from the course.

## 5 Initial Course Schedule

I reserve the right to adjust or remove elements of this schedule based on our pace or canceled classes due to inclement weather. The most recent schedule will always be found on ELMS. If classes are canceled on a Quiz or Midterm day (all Wednesdays), the quiz/midterm will be held on Friday's discussion section.

Week 1 - January 25

Part One - Foundations (Chapters 1-3)

Week 2 - February 1

Part One - Foundations (Chapters 3-5)

**PROBLEM SET #1 - Fri Feb 5**

Week 3 - February 8

Part Two - Optimization with One Independent Variable (Chapter 6-7) **QUIZ #1 - Wed Feb 10**

Week 4 - February 15

Part Two - Optimization with One Independent Variable (Chapter 8-9) **PROBLEM SET #2 - Fri Feb 19**

Week 5 - February 22

Catch Up Part Two

Part Three - Mathematics of Finance and Growth (10-11)

Week 6 - February 29

Part Three - Mathematics of Finance and Growth (11-13)

**PROBLEM SET #3 - Fri Mar 4**

Week 7 - March 7

CatchUp/Review

**MIDTERM EXAM - Wed Mar 9**

No discussion section unless make-up

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Week 8 - March 21

Part Four - Optimization with 2+ Independent Variables (14)

Week 9 - March 28

Part Four - Optimization with 2+ Independent Variables (15)

**PROBLEM SET #4 - Fri Apr 1**

Week 10 - April 4

Part Four - Optimization with 2+ Independent Variables (16)

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Week 11 - April 11

Part Four - Optimization with 2+ Independent Variables (17)

**PROBLEM SET #5 - Fri Apr 15**

Week 12 - April 18 Catch Up Part Four or begin Advanced Topics

**QUIZ#2 - Wed Apr 20**

Week 13 - April 25

Part Five - Select Advanced Topics (18-20)

Week 14 - May 2

Part Five - Select Advanced Topics (18-20)

**PROBLEM SET #6 - Fri May 6**

Week 15 - May 9

Review/Catch-Up

**FINAL EXAM - 5/14 1:30-3:30pm**