

**ECON 3620: Mathematics for Economists**

**Instructor: Iris Buder**

Email: [iris.buder@gmail.com](mailto:iris.buder@gmail.com); Canvas **Summer Semester 2014**

Meeting Time: Tuesday, Thursday 6:00-9:00 pm Meeting from 05/13 to 06/17

Place: BuC 107 Units: 3

**Office Hours:** Tuesday and Thursdays, 4:00 – 5:30

Place: OSH 213

**Prerequisites: College Algebra (MATH 1090 preferred); ECON 2010 and ECON 2020**

**CATOLOG DESCRIPTION**

**This course fulfills Quantitative Intensive BS**.

It is a course based on the use of mathematical language and techniques to formulate and solve problems in economics. Topics include linear algebra, differential and integral calculus, and constrained optimization.

**INSTUCTOR’S DESCRIPTION**

This course focuses on the mathematical foundations used in economic theory. The purpose of this course is to provide students with the necessary mathematical tools that are used in studying and understanding economics.

Throughout this course, we will take a fairly high-level approach to the mathematics in this course, but most of the emphasis will be on the applications or economic models rather than abstract mathematical theorems or concepts. This course will not be highly devoted to learning intense mathematical theorems or use pure mathematical language.

The objective of this course is to help the students develop a precise understanding of the mathematics thought and the majority of the course will be devoted to teaching the concepts of calculus and linear algebra, and incorporating these concepts into economic theory.

**MATH 1090 is a prerequisite for the course, and so the student is required to have adequate knowledge of algebra**.

The first lecture of the semester will be devoted for a **quick** review of algebraic techniques, but if a student believes that their knowledge of that material isn’t as strong as it should be, then I would highly recommend reviewing the material in order to brush up on it. At the end of this course, students will be able to solve rather complex economic problems using a fairly high level of mathematics.

**Essential General Education Learning Outcomes Targeted by this Course:**

**Quantitative Literacy:**

The course will strengthen a student’s ability to interpret certain economic equations through the use of concrete mathematical foundations. The goal of this course is that each student is able to grasp the mathematical tools and foundation needed in order to apply them to certain economic situations and economic theories.

In doing so, the students should be able to interpret, and successfully explain, the information presented in the class. In order to be successful at this, the class focuses on developing a student’s ability to explain and understand the mathematical equations and calculations first; then build up to the process of applying it to economic situations. It is important that each student can successfully complete all of the calculations needed with consistency and accuracy.

After building on the mathematical foundation and required calculations, the course shifts over to applications, analysis and estimation. In this section, the student will be required to make assessments through the use of quantitative analysis. Lastly, the student will be required to clearly communicate these assessments to the instructor.

**COURSE MATERIAL**

**Recommended Textbooks (optional):**

*Fundamental Methods of Mathematical Economics*

Alpha C. Chiang, Kevin Wainwright (Fourth Edition)

*Introduction to Mathematical Economics.*

Schaum.

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| *University of Utah*  *Grading Scale* | | |
|  | *Score* | *GPA* |
| A | : 93-100 | 4.0 |
| A- | : 90-92 | 3.7 |
| B+ | : 87-89 | 3.3 |
| B | : 83-86 | 3.0 |
| B- | : 80-82 | 2.7 |
| C+ | : 77-79 | 2.3 |
| C | : 73-76 | 2.0 |
| C- | : 70-72 | 1.7 |
| D+ | : 67-69 | 1.3 |
| D | : 63-66 | 1.0 |
| D- | : 60-62 | 0.7 |
| E | : 0-59 | 0.0 |

**Note:** I do not have a required textbook for this class. It is up to each individual as to whether or not they think it would be beneficial to have the extra help that a textbook could provide.

**COURSE REQUIREMENTS:**

Class work/participation 5%

Homework assignments 15%

First Midterm Exam: 25 %

Second Midterm Exam: 25%

Final Exam: 30%

All exams will be in-class exams. Prior to each of the exams, we will do a review session.

**Class Rules**

* Be courteous and respectful of your classmates and your professor. Loud, distracting behaviors and conversations are detrimental to the learning environment, and may result in point deductions.
* Turn off your cell phones and other communication devices before class begins. Texting, calling or other distracting activities will not be tolerated.
* It is your responsibility to keep track of all additional information provided in class. Please, make an effort to attend all classes and take notes. If you miss class, you will have to catch up with us on your own.

**Absolutely no cell phones in class.**

* Please do not take our your phone and take pictures of the board.
* First of all, this **INTERRUPTS** your fellow classmates and distracts from the content being covered.
* Second of all, if you take a picture of the material then you are hindering your own learning of it. Under no circumstances will this be tolerated.

**Make-up exam policy:**

**For exams:**

You will have to give me at least one week notice otherwise no make-up exam will be available. Make-up exams ***MUST*** be pre-arranged unless there is an emergency case (proper documentation is needed in any case).

When taking a make-up exam at the testing center, you have to take it on the ARRANGED date that we have decided upon (you do not have the ability to take it whenever you choose to).

***Homework assignment policies:***

Homework is due by the end of the day that it is assigned (easiest way to turn it in is during class, either at the beginning or the end of class). The reason why I would prefer the homework to be turned in at the beginning of class is that you will always have at least one week to do the assignment, which is more than enough time. Hence, if you come to class and work on the assignment during the lecture, that will take away from you comprehending what I am teaching that day.

Make note: once you’ve turned it in, you cannot have it back to make changes. You can email the assignment to me, if needed.

Partial credit will be given to late homework assignments up to a day after it is due. After that, no credit whatsoever will be given to the homework assignment.

**COURSE OUTLINE (tentative)**

1) Introduction and Fundamentals

a. Introduction to Mathematical Economics

b. A review of some basics of Mathematics

c. Introduction to Real Analysis: Sets, Numbers, Functions, Sequences, Series

2) One-variable Calculus and Optimization

a. Limits and Functions

b. Continuity, Derivate, Differential, Integrals

c. Optimization of functions of one variable

3) Linear Algebra

a. Matrices and Vectors

b. Linear Systems, Matrix Algebra, Identity Matrices, Cramer’s Rule

4) Calculus of Several Variables and Optimization

a. Functions of Several Variables, Partial Derivates, and Total Derivates

b. Gradients, Hessians, and Implicit Functions

c. Unconstrained optimization

d. Constrained optimization, Lagrange multiplier

e. Utility Maximization and Consumer Demand

f. Homogenous Functions

**Important University Policies**

“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 the class, reasonable prior notice needs to be given to the Center for Disability Services (CDS), 162 Olpin Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations.  All information in this course can be made available in alternative format with prior notification to the Center for Disability Services.”

Students who need special accommodation for the exams will need to contact the University’s Testing Center [www.sa.utah.edu/testing/](http://www.sa.utah.edu/testing/). Please be advised that you may need to provide a physician’s note stating your condition.

“All students are expected to maintain professional behavior in the classroom setting, according to the Student Code, 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, 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.”

**Note: This is not a binding contractual agreement. I reserve the right to make changes to this syllabus as needed.**