**ECON 3620: Mathematics for Economics**

**Instructor: Iris Buder**

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Meeting Time: Tuesdays, 6:00-9:00 pm in BuC 305

Semester: Fall Semester 2011

Office Hours: By Appointment

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 prerequisitie for the course, and so the student is required to have adequate knowledge of algebra. The first lecture 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.

**COURSE MATERIAL**

**Recommended Textbook:**

Alpha C. Chiang, Kevin Wainwright; Fundamental Methods of Mathematical Economics. Fourth Edition.

**COURSE REQUIREMENTS:**

Homework 20%

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 based on a study guide that I will either post via WebCT or hand-out in class.

Make-up exam policy:

In terms of make-up exams, you will have to give me at least three weeks notice otherwise no make-up exam will be available.

**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.”