Instructor:	Aidin Hajikhameneh
Office Location:	DMH 142
Email:	aidin.hajikhameneh@sjsu.edu
Office Hours:	Tuesday, 11:00am-12:00pm (through Canvas); and by appointment
Class Days/Time:	Online
Prerequisites:	ECON 1A, ECON 1B, & MATH 30 or MATH 71

1 Course Description

1.1 Catalog Description

Applications of linear algebra and differential calculus to economic analysis. Topics include market equilibrium, properties of production functions, multipliers, optimization methods, comparative statics analysis. Prerequisite: ECON 1A, ECON 1B, & MATH 30 or MATH 71

1.2 Additional Description

Mathematics and mathematical modeling are essential components of an economist's toolkit. The main objective of this course, hence, is to provide students with the basic mathematical knowledge required to analyze economic problems. To this end, during the semester, we will mainly focus on the following topics: single and several variable calculus, calculation of derivatives (including partial derivatives), optimization (constrained & unconstrained), matrix algebra, and linear programming.

SJSU classes are designed such that in order to be successful, it is expected that students will spend, for each unit of credit, a minimum of forty-five hours over the length of the course (normally 3 hours per unit per week with 1 of the hours used for lecture) for instruction or preparation/studying or course related activities including weekly assignments, in-class simulations, and three exams. Careful time management

will help you keep up with readings and assignments and enable you to succeed in this class. More details about student workload can be found in University Policy S12-3.

2 Course Format

This is an online class delivered through Canvas as such, students are required to have access to a computer that has the most up to date operating system, up to date web browser and associated media players, a webcam, and microphone. There are computers available on campus and at libraries, tech centers, proctoring centers, etc. These are all to ensure that you have the necessary system requirements to smoothly run the Canvas site and therefore participate in the class activities.[1]

Students are prohibited from recording class activities (including class lectures, office hours, advising sessions, etc.), distributing class recordings, or posting class recordings. Materials created by the instructor for the course (syllabi, lectures and lecture notes, presentations, etc.) are copyrighted by the instructor. This university policy (S12-7) is in place to protect the privacy of students in the course, as well as to maintain academic integrity through reducing the instances of cheating. Students who record, distribute, or post these materials will be referred to the Student Conduct and Ethical Development office. Unauthorized recording may violate university and state law. It is the responsibility of students that require special accommodations or assistive technology due to a disability to notify the instructor.

2.1 Lectures via Zoom in Canvas

The lectures are delivered asynchronously. That is, I recorded the lectures in Zoom and make them available each week on Mondays.

2.2 Office Hours via Zoom in Canvas

I have synchronous office hours via Zoom in Canvas on Tuesdays from 12:00 to 1:00 pm. This is an excellent opportunity to interact with your fellow students and me in real time. To join office hours from

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[1]In an online class it is your responsibility to ensure you have the proper technology to view the online curriculum. Canvas or SJSU eCampus can provide support for you to get started. Technical support is provided on campus when you are having technical difficulties such as password reset, browser problems, computer problems, accessibility and issues encountered when using Canvas courses. http://www.sjsu.edu/ecampus/ or: (408) 924-2337 or: ecampus@sjsu.edu

PC, Mac, Linux, iOS or Android, use the following links and password:

https://sjsu.zoom.us/j/83297021545?pwd=R2ZMME1ERGtraXYwVEl6M3NERUlsdz09

Password: 344387

2.3 Exams in ProctorU

All exams are held synchronously via ProctorU. All students take their exam at same time. For details of exams' weight and time, see Sections 6.2 and 9, respectively.

ProctorU is an online proctoring service that allows you to take your exam from your home. ProctorU is available 24/7. Creating a ProctorU account is simple! All you will need to do is visit the following link; https://go.proctoru.com/registrations and select the "Test-Taker" option.

Please be sure to review the Student Resource Page to prepare yourself and your work-space for your appointment. ProctorU encourages students to test their computer by logging in to your ProctorU account and clicking "Test your Equipment" to make sure your computer is optimal for testing to ensure you have the best possible testing experience. You will be able to test your equipment and connect with a ProctorU representative for tech support 24/7 if needed.

In order to use ProctorU you will need to have a high-speed internet connection, a webcam (internal or external), a Windows or Mac Operating System, and a government issued photo ID. Please note tablets (Chromebooks, iPads, and Surface Pro's) are not compatible. You must have a working webcam and microphone in order to test.

3 Course Learning Outcomes and Program Learning Objectives

This course fits into the following Department of Economics program leaning objectives (PLO).

- PLO 4: Specialist Area (Policy Economics, Quantitative Methods)

Upon successful completion of this course, students should be able to demonstrate the following:

- CLO 1: define and explain indifference curve, isoquant, cost minimization, profit maximization, equilibrium conditions in output and input markets, and the national income model.

- CLO 2: identify and apply functions of one or more variables, simple differentiation, partial and total differentiation, and matrix algebra.

- CLO 3: solve simple real-world optimization problems both mathematically and graphically.

4 Required Texts/Readings

4.1 Primary Textbook (Required)

- Essential Mathematics for Economic Analysis, 5th Edition, by Knut Sydsaeter, Peter Hammond and Arne Strom.

If you choose to use an older version of the text, it is your responsibility to account for any differences in assigned readings and homework problems.

4.2 Other Readings (Not Required)

- "Intermediate Microeconomics: A Modern Approach" by Hal Varian is the textbook if you want a refresher on microeconomics.

- "Mathematics for Economists", by Lawrence Blume & Carl P. Simon for an advance treatment of topics covered in this course.

5 title

6 Assignments and Grading Policy

Grades for this course are composed of three homework assignments, two midterms, and a final exam. The grading rubric and a description of each component is provided below:

Grade Breakdown:

- Homeworks   30% (10% each)

- Midterm Exams   40%

- Final Exam   30%

6.1 Homework

There will be 3 homework assignments. Each is worth 10% of the final grade. Take the homework assignments seriously. Students often learn more from carefully thinking through the homework questions than taking exams. Working in groups on homework assignments is allowed (and advised). Each student must prepare a separate write-up. Students should submit their homework assignments through Canvas in a PDF file. The file name should be of the following format:

First name-Last name-Student number-Course name-Homework #

For example:

Aidin-Hajikhameneh-123456789-Microeconomic Analysis-Homework 1

See Section 9 for homework due dates and due times. **No late homework will be accepted.**

6.2 Midterm and Final Exam

Each midterm is worth 20% of your grade. The final exam is worth 30% of your grade. The two midterms mainly cover calculus related subjects such as functions, derivatives, and optimizations. The final exam only covers matrix algebra and linear programming. Exams will be mainly composed of multiple-choice questions. The best way to prepare is to review all homework assignments, study all of the readings, and practice with some of the questions out of the primary textbook.

Exams will be proctored in this course through ProctorU. Please note it is the instructor's discretion to determine the method of proctoring. If cheating is suspected the proctored videos may be used for further inspection and may become part of the student's disciplinary record.

6.3 Grading Criterion

Your grade is determined at the end of the semester based on your performance on homework assignments (30%) and three exams (70%). Grades will be curved in the end of semester as needed. Letter grades will be determined as shown in Table 1:

Category	Letter Grade	Numerical Grade
A	A^+	97-100
	A	93-96
	A^-	90-92
B	B^+	87-89
	B	83-86
	B^-	80-82
C	C^+	77-79
	C	73-76
	C^-	70-72
D	D^+	67-69
	D	63-66
	D^-	60-62
F	F	Below 60

Table 1: **Grading Criteria.**

7   University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' Syllabus Information web page.

8   MYSJSU Messaging

Copies of the syllabus, assignments, notes etc. can be found on Canvas Leaning Management System. Check the Canvas for updates regularly.

9   Econ 104 Course Schedule and Readings

All due dates and due times are according to Pacific Standard Time (PST).

Week	Date	Topics & Readings	Due
1	1/26, 1/31	Overview of the course & Properties of Functions (Ch. 4 and 5)	
2	2/7	Properties of Functions (Ch. 4 and 5) (cont.)	
3	2/14	Differentiation (Ch. 6)	
4	2/21	Differentiation cont. (Ch. 6)	
5	2/28	Derivatives in Use (Ch. 7)	
6	3/7	Single Variable Optimization & (Ch. 8) Functions of Many Variables (Ch. 11)	
7	**3/14***	Functions of Many Variables (cont.) & (Ch. 11) Multivariable Optimization and (Ch. 13)	***HW1** **Due March 14 by 4:00 pm**
8	**3/21****	**Midterm I****	**From 4:00 to 6:00 pm**
9	4/4	Constrained Optimization (Ch. 14)	
10	4/11	Matrix and Vector Algebra (Ch. 15)	
11	**4/18***	Determinants and Inverse Matrices (Ch. 16)	***HW2** **Due April 18 by 4:00 pm**
12	**4/25****	**Midterm II****	**From 4:00 to 6:00 pm**
13	5/2	Determinants and Inverse Matrices (Ch. 16) (cont.)	
14	5/9	Linear Programming (Ch. 17)	
15	**5/16***	Review	***HW3** **Due May 16 by 4:00 pm**
Final Exam	5/19	5:15pm-7:30pm.	

Table 2: **Spring 2022 Course Schedule.**