San José State University

Department of Economics
ECON 104, Mathematical Methods for Economics, Section 01, Fall 2021

Course and Contact Information

Instructor:	Dr. Fahmida Fakhruddin
Email:	fahmida.fakhruddin@sjsu.edu Email is preferred and the best way to contact me. I will respond to emails within 24 business hours. (Remember to write "Econ 104-1 or something similar, together with the topic of the email) You can also use the Canvas Inbox for emailing me.
Virtual Office Hours:	Wednesdays 4 pm – 5:30 pm through zoom or by appointment
Class Days/Time:	Tuesday & Thursday/ 10:45 am - 12 pm through zoom meeting
Classroom:	Synchronous Zoom Meeting
Prerequisites:	ECON 1A, ECON 1B, and MATH 30 or MATH 30X or MATH 71 or MATH 71X

Course 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. The main purpose of this class is to provide fundamental mathematical logic and tools for formal economic analysis. Thus, we will learn single and multiple variable calculus, calculation of derivatives, constrained and unconstrained optimization, matrix algebra, and linear programming.

Course Learning Outcomes (CLO)

Upon successful completion of this course, students should be able to do the followings:
1. define and explain indifference curve, isoquant, cost minimization, profit maximization, equilibrium conditions in output and input markets, and the national income model.
2. identify and apply functions of one or more variables, simple differentiation, partial and total differentiation, and matrix algebra.
3. solve simple real-world optimization problems both mathematically and graphically.

MYSJSU Messaging and Canvas

Course materials such as syllabus, handouts, grades, messages regarding the class can be found on Canvas Leaning Management System course login website. You are responsible for regularly checking with the messaging system through MySJSU to learn of any updates. *See University Policy F13-2 for more details.*

Required Texts/Readings

Textbook

Knut Sydsæter, Peter Hammond, Arne Strøm and Andrés Carvajal, **Essential Mathematics for Economic Analysis**, 5th edition, Pearson

ISBN: 978-1-292-07461-0

Library Liaison

Christa Bailey, christa.bailey@sjsu.edu

Class Philosophy

Some of you start classes feeling isolated and lost but not in our class! This class is a community and each of you is part of the community. We all have the same objective: to learn. This class is designed to have you learn in community with your peers. When you're a member of a community, you can rely upon others for help and support when you need it, but you must also be willing to step up and contribute regularly, as well! Let's work together to make this semester awesome for everyone!

Course Requirements

As this class is a four unit class, successful students should expect to spend about 180 hours (normally twelve hours per week or three hours per unit per week) throughout the semester, including reading, preparing for class, attending class, participating in course activities, and so on. *More details can be found from University Syllabus Policy S16-9.*

We will use **zoom** for regular class meeting. It is expected that you will attend classes each week, participate in discussions in class, complete readings before class each week, work on homework and practice problem set questions and take midterms and final exam.

If you feel you are lost or experience any difficulty in this course, please do not hesitate to come to me for help. Please remember that I am just an email away. I am always happy to clarify difficult concepts, resolve any lingering confusion, or otherwise assist you in making this course fun and productive.

Zoom Class Protocol

Use of Camera in Class

I would encourage students to turn on their cameras in Zoom meetings and office hours. If you turn off your video, please have a profile picture that is you. Please use your real name to log in for entry to zoom. Attendance will be taken in every class. I would love to see your beautiful face at least some of the time during our zoom class meetings. Please contact me as soon as possible if you have any concern about appearing on camera yourself.

Recording Zoom Classes

This course or portions of this course (i.e., lectures, discussions, student presentations) will be recorded for instructional or educational purposes. The recordings will only be shared with students enrolled in the class

through Canvas. Students are permitted to only view the recordings, not download the videos. The recordings will be deleted at the end of the semester. If, however, you would prefer to remain anonymous during these recordings, then please contact me about possible accommodations (e.g., temporarily turning off identifying information from the Zoom session, including student name and picture, prior to recording).

Zoom Classroom Etiquette

● Mute Your Microphone: To help keep background noise to a minimum, make sure you mute your microphone when you are not speaking.
● Be Mindful of Background Noise and Distractions: Find a quiet place to "attend" class, to the greatest extent possible.
  ○ Avoid video setups where people may be walking behind you, people talking/making noise, etc.
  ○ Avoid activities that could create additional noise, such as shuffling papers, listening to music in the background, etc.
● Position Your Camera Properly: Be sure your webcam is in a stable position and focused at eye level.
● Limit Your Distractions/Avoid Multitasking: You can make it easier to focus on the meeting by turning off notifications, closing or minimizing running apps, and putting your smartphone away (unless you are using it to access Zoom).
● Use Appropriate Virtual Backgrounds: If using a virtual background, it should be appropriate and professional and should NOT suggest or include content that is objectively offensive or demeaning.

Course Assignments and Grading

Your grade will depend on the following assignments:

Homework (10% each)	30%
Mid-term (20% each)	40%
Final Exam	30%

Converting number grades to letter grades:

97-100 A plus	93-96 A	90-92 A minus
87-89 B plus	83-86 B	80-82 B minus
77-79 C plus	73-76 C	70-72 C minus
67-69 D plus	63-66 D	60-62 D minus
<60 F		

I totally understand the stress of getting good grades. To avoid this stress, please try to do your work on time. If you need help on an assignment, don't wait . Contact me or one of your peers as soon as you can. No worries, we all will work together for your success in this class.

Homework

Three homework assignments will be given during the semester to help you understand the mathematical logic and tools for economic analysis. You can work with your peers on homework assignments, but you must turn in your own answers. There will be ungraded practice problem set as well so that you can practice more and learn

the materials faster. However, from my experience, I noticed that learning material is directly correlated with completing the practice problem sets. Also, the more you practice, the better you will perform on tests.

Online Midterm and Final

The course consists of three midterms and one final exam. I will drop the lowest midterm grade. Midterm and final exam will cover material presented in class and will be similar to the homework questions. The final exam will be comprehensive. All exams will be closed book and closed note.

Proctoring Software and Exams

Exams will be proctored in this course through Respondus Monitor and LockDown Browser. 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. Note that the proctoring software does not determine whether academic misconduct occurred, but does determine whether something irregular occurred that may require further investigation. Students are encouraged to contact the instructor if unexpected interruptions (from a parent or roommate, for example) occur during an exam.

Online Exams Testing Environment: Setup

● No earbuds, headphones, or headsets visible.

● The environment is free of other people besides the student taking the test.

● If students need scratch paper for the test, they should present the front and back of a blank scratch paper to the camera before the test.

● No other browser or windows besides Canvas opened.

● A workplace that is clear of clutter (i.e., reference materials, notes, textbooks, cellphone, tablets, smart watches, monitors, keyboards, gaming consoles, etc.)

● Well-lit environment. Can see the students' eyes and their whole face. Avoid having backlight from a window or other light source opposite the camera.

● Personal calculators - indicate if permitted.

Testing Environment: Scan

Before students can access the test questions, they are expected to conduct a scan around their testing environment to verify that there are no materials that would give the student an unfair advantage during the test. The scan will include:

● the desk/work-space

● a complete view of the computer including USB ports and power cord connections

● a 360-degree view of the complete room

Students must:

● Remain in the testing environment throughout the duration of the test.

● Keep full face, hands, workspace including desk, keyboard, monitor, and scratch paper, in full view of the webcam.

Technical difficulties

Internet connection issues:

Canvas autosaves responses a few times per minute as long as there is an internet connection. If your internet connection is lost, Canvas will warn you but allow you to continue working on your exam. A brief loss of internet connection is unlikely to cause you to lose your work. However, a longer loss of connectivity or weak/unstable connection may jeopardize your exam.

Other technical difficulties:

Immediately email the instructor a current copy of the state of your exam and explain the problem you are facing. Your instructor may not be able to respond immediately or provide technical support. However, the copy of your exam and email will provide a record of the situation. Contact the SJSU technical support for Canvas:

Technical Support for Canvas

Email: ecampus@sjsu.edu

Phone: (408) 924-2337

https://www.sjsu.edu/ecampus/support/

If possible, complete your exam in the remaining allotted time, offline if necessary. Email your exam to your instructor within the allotted time or soon after.

Late Policy

Plan on submitting work on time.

Every assignment has a due date, and a deadline for submissions. Participants are expected to submit assignments on or before the assigned due date, which, in turn, allows me time to review your work and provide meaningful feedback. Due dates have been designed in the course to ensure time is provided to allow you to produce your best work.
Because time management is challenging, deadlines might not be met. But, you're in luck. Late submissions will be accepted with a penalty. Late assignments will be accepted up to 10 days with a 5% penalty per day.

Don't want the penalty?

If you recognize a due date might be a problem, advocate for your success by following these steps:

1. Identify the problem

2. Contact me to propose a solution

3. Let's negotiate

Academic Integrity

Students must abide by the San José State University *Academic Integrity Policy*. There is zero tolerance for cheating, plagiarism, or any other violation of academic integrity. Students who are suspected of academic integrity violations will be referred to the Student Conduct and Ethical Development office and depending on the severity of the conduct, will receive a zero on the assignment or a grade of F in the course. Grade Forgiveness does not apply to courses for which the original grade was the result of a finding of academic dishonesty.

Accommodations for Learning Disabilities

Students with learning disabilities are encouraged to request accommodations for the course. Please contact the Accessible Education Center to schedule an appointment with an AEC coordinator to determine eligibility and register.

Policy on Consent for Sharing Instructor and Course Materials

Students are prohibited from recording, distributing, or posting instructor and course materials (including assessment questions, solutions, feedback, discussion posts, PowerPoint presentations, guides, class lectures, office hours, advising sessions, etc.), without prior written approval (*University Policy S12-7*). Materials created by the instructor for the course (syllabi, lectures and lecture notes, presentations, etc.) are copyrighted by the instructor. Students who record, distribute, or display (post/upload) these instructor and course materials in any way — whether or not a fee is charged — will be referred to the Student Conduct and Ethical Development office.

University Policies

Per University Policy S16-9, relevant information to all courses, such as academic integrity, accommodations, dropping and adding, consent for recording of class, etc. is available on Office of Graduate and Undergraduate Programs' Syllabus Information web page.

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The schedule is subject to change with fair notice in class and on Canvas

Course Schedule

Week	Date	Topics, Readings, Assignments, Deadlines
1	Aug 19	Syllabus, Introduction
2	Aug 24	Properties of Functions, Chapter 4, 5
2	Aug 26	Properties of Functions continued, Chapter 4, 5
3	Aug 31	Differentiation, Chapter 6

Week	Date	Topics, Readings, Assignments, Deadlines
3	Sep 02	Differentiation continued, Chapter 6
4	Sep 07	Derivatives in Use, Chapter 7,
4	Sep 09	Derivatives in Use continued, Chapter 7
5	Sep 14	Derivatives in Use continued, Chapter 7
5	Sep 16	Review for Midterm 1, **Homework 1 Due**
6	Sep 21	**Midterm 1- Tuesday 09/22/2021**
6	Sep 23	Single Variable Optimization, Chapter 8
7	Sep 28	Single Variable Optimization continued, Chapter 8
7	Sep 30	Single Variable Optimization continued, Chapter 8
8	Oct 05	Single Variable Optimization continued, Chapter 8
8	Oct 07	Functions of Many Variables, Chapter 11
9	Oct 12	Functions of Many Variables continued, Chapter 11
9	Oct 14	Functions of Many Variables continued, Chapter 11
10	Oct 19	Functions of Many Variables continued, Chapter 11
10	Oct 21	Review for Midterm 2, **Homework 2 Due**
11	Oct 26	**Midterm 2, Tuesday 10/26/2021**
11	Oct 28	Multivariable Optimization, Chapter 13
12	Nov 02	Multivariable Optimization continued, Chapter 13
12	Nov 04	Constrained Optimization, Chapter 14
13	Nov 09	Constrained Optimization continued, Chapter 14, Linear Regression
13	Nov 11	**Midterm 3**, **Thursday 11/11/2021**
14	Nov 16	Matrix and Vector Algebra, Ch 15, **Homework 3 Due**
14	Nov 18	Matrix and Vector Algebra continued, Ch 15
15	Nov 23	Determinants and Inverse Matrices, Ch 16
16	Nov 30	Determinants and Inverse Matrices continued, Ch 16
16	Dec 02	Linear Programming, Review for Final
18	Dec 09	**Final Exam, Thursday 12/09/2021, 10 am-12:30 pm**