

San José State University
Department of Economics
ECON 104, Mathematical Methods for Economics, Section 01, Fall 2024

Course and Contact Information

Instructor:	Fahmida Fakhruddin, Ph.D.
Office Location:	DMH 214
Telephone:	Email is preferred
Email:	fahmida.fakhruddin@sjsu.edu (Remember to write “Econ 104-1 or something similar, together with the topic of the email)
Office Hours:	After class and zoom meeting by appointment
Class Days/Time:	Tuesdays & Thursdays/ 12 pm - 1:15 pm
Classroom:	DMH 227
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.

Course Format

This course adopts a completely synchronous delivery format with designated day/time meeting pattern. Reliable internet connectivity and a computer or laptop with **webcam** and **microphone** are required for the course.

MYSJSU Messaging and Canvas

Course materials such as syllabus, handouts, grades, messages regarding the class can be found on [Canvas Learning Management System course login website](#). This will be your “**one stop shop**” for this class. You are responsible for regularly checking with the messaging system through [MySJSU](#) to learn of any updates. Please set your Canvas notification preferences to daily (note that the default setting is weekly notification). Please check Canvas “Announcements” for any updates as well as reminders for assignments. 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**, 6th edition, Pearson

ISBN-13: 9781292359281

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!

Technology requirements / equipment / material

REQUIRED: Reliable internet connectivity, Computer/Laptop/Tablet with webcam and microphone, and Canvas LMS access. [SJSU's technology loan program](#) provides resources for computer equipment and software.

Canvas

Canvas is the “hub” for the course and will house all communication, content, activities, assignments, grades, and Smartwork5. Check out all of the [Canvas student resources](#).

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](#).*

It is expected that you will attend classes each week, participate in discussions in class, 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.

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 with 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.

Class Attendance and Participation

Attendance and active participation in class are expected and required. Learning material is directly correlated with attending class. Also, the more you attend, the better you will perform on tests.

Class discussion is important for both individual and collective learning. Your active participation is as critical for your learning as mere attendance is.

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.

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.

Classroom Protocol

1. Please come to class prepared and on time.
2. Turn your cell phone off during class sessions.
3. Cheating will not be tolerated. Copying another student's work or using an external source of information for which you were not explicitly given permission during an exam will result in disciplinary action. This disciplinary action might include anything from receiving zero points on the exam to an F in the class.

Technical Support for Canvas

Email: ecampus@sjsu.edu

Phone: (408) 924-2337

<http://www.sjsu.edu/ecampus/>

Communication Policy

What You Can Expect From Me

I will be an active participant in this course and will be with you on the journey through the entire semester. You can expect that I will:

- Communicate with you via Announcements, Canvas Inbox messages, grading feedback, and/or class discussion
- Respond to all student questions within 48 hours
- Provide grades within 1 week of the due date

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 for 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, 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 22	Syllabus, Introduction
2	Aug 27	Properties of Functions, Chapter 4, 5
2	Aug 29	Properties of Functions continued, Chapter 4, 5

Week	Date	Topics, Readings, Assignments, Deadlines
3	Sep 03	Differentiation, Chapter 6
3	Sep 05	Differentiation continued, Chapter 6
4	Sep 10	Derivatives in Use, Chapter 7,
4	Sep 12	Derivatives in Use continued, Chapter 7
5	Sep 17	Derivatives in Use continued, Chapter 7
5	Sep 19	Review for Midterm 1, Homework 1 Due
6	Sep 24	Midterm 1- Tuesday 09/24/2024
6	Sep 26	Single Variable Optimization, Chapter 8
7	Oct 01	Single Variable Optimization continued, Chapter 8
7	Oct 03	Single Variable Optimization continued, Chapter 8
8	Oct 08	Single Variable Optimization continued, Chapter 8
8	Oct 10	Functions of Many Variables, Chapter 11
9	Oct 15	Functions of Many Variables continued, Chapter 11
9	Oct 17	Functions of Many Variables continued, Chapter 11
10	Oct 22	Functions of Many Variables continued, Chapter 11
10	Oct 24	Review for Midterm 2, Homework 2 Due
11	Oct 29	Midterm 2, Tuesday 10/29/2024
11	Oct 31	Multivariable Optimization, Chapter 13
12	Nov 05	Multivariable Optimization continued, Chapter 13
12	Nov 07	Constrained Optimization, Chapter 14
13	Nov 12	Constrained Optimization continued, Chapter 14, Linear Regression
13	Nov 14	Midterm 3, Thursday 11/14/2024
14	Nov 19	Matrix and Vector Algebra, Ch 15, Homework 3 Due
14	Nov 21	Matrix and Vector Algebra continued, Ch 15
15	Nov 26	Determinants and Inverse Matrices, Ch 16
16	Dec 03	Determinants and Inverse Matrices continued, Ch 16
16	Dec 05*	Linear Programming, Review for Final
18	Dec 17	Final Exam, Tuesday 12/17/2024, 09:45 am-12:00 pm

* Last class meeting