San José State University
CoSS/Department of Economics
ECON104, Mathematical Methods for Economics, Sec 01, Spring, and 2020

Course and Contact Information

Instructor:	Dr. Rui Liu
Office Location:	DMH 143
Telephone:	408-924-5423
Email:	rui.liu@sjsu.edu
	No appointment needed: Canvas Discussion Board
Office Hours:	By appointment: Tuesday 10 am -11 am via ZOOM
	In-person: Thursday 11am-12 pm at DMH 143
Class Days/Time:	Thursday 12-1:15 pm
Classroom:	Canvas and DMH 166

Course Description

The objective of the course is to survey some basic mathematical techniques that are widely used to connect important elements in economic theory and to solve economic problems. It is a mathematical restatement of the economic theory contained in microeconomics and macroeconomics.

Course Learning Outcomes (CLO)

Students will acquire enough mathematical skill to access literature that is most relevant to their study.

Upon successful completion of this course, students will be able to:

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.*

Recommended Texts/Readings

Recommended Textbook

Business Calculus, by Shana Calaway, Dale Hoffman, and David Lippman . The book is freely available at http://www.opentextbookstore.com/buscalc/BusCalc.pdf

Essential Mathematics for Economic Analysis, 4th Edition, by Knut Sydsaeter, Peter Hammond and Arne Strom, ISBN: 9780273760689.

Optional Readings

A Mathematical Approach to Economic Analysis, by P. Toumanoff & F. Nourzad

Coursework Commitment

This is a four-unit undergraduate level course. SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of three hours per unit per week, including participating course activities, completing problem sets, mastering software languages, and so on. More details about student workload can be found in University Policy S12-3 (Links to an external site.) at http://www.sjsu.edu/senate/docs/S12-3.pdf.

Course Requirements and Assignments

The course grade will be based on weekly problem sets, discussion participation, a group project, two midterms, a final exam. The scores are averaged with the following weight:

Assignment	Weight	Due Dates
Problem Sets (two lowest dropped)	35%	**Every Thursday at 12 pm**

Weekly Discussion	10%	**Every Wednesday at 11:59 pm**
Group project	10%	**5/13 12:00 pm due**
Midterm1	15%	**3/5**
Midterm 2	15%	**4/16**
Final Exam	15%	**5/7**

Problem Sets

Problem sets will be assigned on a weekly basis throughout the semester (with a total of 10). Students may feel free to collaborate on problem sets in small groups, though each student must submit their own set of answers. Students should not post solutions on the general discussion board for all to see. Completed solutions to problem sets must be submitted in class on Thursdays. No late submission is accepted. The lowest two scores on problem sets will be dropped. No make-up problem set will be given.

Discussion

Weekly Discussions - Each week, you are expected to post at least one "muddy point" – that is, an unanswered question you have after completing the modules, an issue that you don't fully understand, or something that you just need clarification on. You will also be asked to respond to at least 2 other students' posts.

Midterm and Final Exams

Two midterms and one final will be administered during the course. Exams will be cumulative with a focus on the most recent concepts presented. Simple (non-graphing) calculators will be required to complete some questions. Students will work individually on exams. Exams will have a time limit and students will be free to consult a **one-sided letter-sized cheat sheet** during the examination. No late submission is accepted. No make-up exam will be given.

Missed Exams

Students are **required** to take exams according to schedule. A student who misses an exam will receive zero point on that exam. No make ups are given. However, if a student has serious and compelling reasons, he/she needs to contact the instructor and receives the instructor's approval **in advance**. With an accepted excuse an average of the score achieved on the other exams will be assigned as the missed exam.

Group Project:

The group project should be completed by 2-3 students. You will be randomly assigned to a group at the beginning of the course. Projects are mainly designed to hone your skills on mathematical modeling based on the tools introduced in the class. Each group is expected to submit **one** electronic copy of the project to Canvas by the specified deadline.

Announcements

Announcements will be posted in Canvas on a regular basis. They will appear on your Canvas dashboard when you log in and/or will be sent to you directly through your preferred method of notification from Canvas. Please make certain to check them regularly, as they will contain any important information about upcoming assignments or class concerns.

Grading Policy

Letter grades will be determined as follows:

A+ = 100-97%	A = 96-93%	A-= 92-90%
B+ = 89-87%	B = 86-83%	B- = 82-80%
C+ = 79-77%	C = 76-73%	C- = 72-70%
D+ = 69-67%	D = 66-63%	D- = 62-60%
F = 59-0% Unsatisfactory		

Class Delivery Mode

This course is delivered 50% online though Canvas and 50% in class. Success in the course requires active participation by logging in to the web based course site multiple times a week to read assigned text sections, review lecture videos, updates and announcements, to complete assignments, take exams. An average student should set aside a minimum of 20-25 hours per week for this summer intensive course. Although, depending on your level of comfort and experience with calculus and technology, your individual time commitment may vary. Check out, "What Makes a Successful Online Student?" at:
http://www.ion.uillinois.edu/resources/tutorials/pedagogy/studentprofile.asp

Technology Requirements

This is a technology heavy class since it is in the online environment. You must have a computer that has the most up to date operating system, Microsoft office, up to date web browser and associated media players, a webcam, microphone and earphone capabilities. There are computers available on campus and at libraries, tech centers, proctoring centers, etc., but you will need to search these resource out for yourself, if needed.

You must also have the necessary system requirements to smoothly run the Canvas site. In an online class it is your responsibility to ensure you have the proper technology to view the online curriculum. I cannot provide tech support for your system or software. Canvas or SJSU ecampus can provide support for your system to get you started.

Canvas: https://docs.google.com/forms/d/e/1FAIpQLScH7-UunrDkUrUUJIig5aPIKJmpjXF84Pua_lFpe0bpgVx5pw/viewform
Or SJSU ecampus: http://www.sjsu.edu/ecampus/ or: (408) 924-2337

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

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 at http://www.sjsu.edu/gup/syllabusinfo/"

ECON 104 / Math Econ, Spring 2020, Course Schedule

List the agenda for the semester including when and where the final exam will be held. Indicate the schedule is subject to change with fair notice and how the notice will be made available.

Course Schedule

Week	Date	Topics, Readings, Assignments, Deadlines
0	1/23	Syllabus
1	1/27-1/31	Functions of One Variable and Properties of Functions, Chp 4, 5
2	2/3 - 2/7	Differentiation, Chp 6
3	2/10 - 2/14	Derivatives in Use, Chp 7
4	2/17-2/21	Single Variable Optimization, Chp 8
5	2/24-2/28	Single Variable Optimization, Chp 8
6	3/2 - 3/6	**Exam**
7	3/9 -3/13	Functions of Many Variables, Chp 11

Week	Date	Topics, Readings, Assignments, Deadlines
0	1/23	Syllabus
8	3/16 -3/20	Multivariable Optimization, Chp 13
9	3/23 - 3/27	Constrained Optimization, Chp 14 Spring Recess
10	3/30 - 4/3	
11	4/6 -4/10	Constrained Optimization, Chp 14
12	4/13 -4/17	**Exam**
13	4/20 -4/24	Matrix and Vector Algebra, Chp15
14	4/27 - 5/1	Determinants and Inverse Matrices, Chp 16
15	5/4 - 5/8	Linear Programming
18	5/13	Final exam Final Group Project Due