

Econ 4370/7370 - Quantitative Economics

Department of Economics
University of Missouri
Fall 2019

Course Description

The aim of this course is to cover essential mathematics used in economics. Topics include introductory linear algebra, multivariate calculus, comparative statics analysis, unconstrained optimization, and equality constrained optimization. May be repeated for credit. Prerequisites: ECONOM 4351 or equivalent; MATH 1320 or equivalent. Graded on A-F basis only.

Class Format

Lecture: Mondays and Wednesday, Middlebush 132, 3 pm - 4:15 pm.

This class uses Canvas for some content delivery and assignments.

Instructor

Saku Aura
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Office hours: Mondays 11 am - 12 pm.

Teaching Assistant

Jing Song
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Office hours: Wednesday 2 pm - 3pm.

Textbooks

Mathematics for Economics. Hoy, Livernois, McKenna, Rees, Stengos. MIT Press, 2011.

Other course content

The online content of the class will lecture notes, problem sets, sample solutions and links to videos and other materials related to the class. All this material is copyrighted and is not to be shared outside the use in this class.

Class progress

This class lasts 15 weeks and for each week there is a module of material to cover. For every week or two weeks, there is also homework due on the following Wednesday's class at the earliest. (CST). This means that a module that starts Monday will have homework due in 9 days' time at the earliest. It is your responsibility to cover the material provided and do the homework within that time period.

Grading

The grading on this course is based on the exams (two exams) and problem sets. The relative weights of these for the final grade are:

Two exams: 80% (40% each)

Problem sets: 20%

Note that + and - modifiers will be used.

Exams

This class will have two exams. Each exam will have last 90 minutes. The exams will be taken at on 10/16 and on 12/4 during the regular class. The exams will be an open book/notes exams, but you are not allowed to consult the internet or ask anyone's, including classmates, help with the exam.

Problem Sets

I will regularly assign problem sets based on the material we have learned. These problem sets will count for 20% of the course grade. Your problem sets should be submitted on paper, at the beginning of class.

For home works and the exams, setting up the problem correctly is the most valuable part. Please write answers that provide enough intermediate steps for us to follow your thought process. A simple answer stating just, say, " $x=2$ " is worth nothing in the exam or the homework regardless if it is correct. On the other hand, an answer that gets the algebra wrong but the thought process right can be worth almost the full credit.

Cooperation in home works is not only allowed, but it is actively encouraged. The home works are a primary learning tool in this class, and it is my hope that we will have an active discussion about the homework problems online. I also strongly encourage you to try all the odd-numbered textbook questions which have solutions provided at the end of the book.

Online Forums

Within the Canvas site, you will find a discussion forum for this class. If you find some concepts unclear, please do not hesitate to ask on this forum. This is preferable to emailing me since others might be stuck with exactly the same issue.

Active participation in the forum can earn you extra credit. This can be for asking or answering questions. For homework questions do not provide the whole answer in the forum, but instead, provide a hint to how to proceed. The instructor will also monitor the forums and participate in the discussions.

Schedule

Week	Starting	Topic	Chapters
1	08/19/19	Review of Fundamentals	1,2
2	08/26/19	Sequences Series and limits	3
3	09/02/19	Continuity	4
4	09/09/19	Univariate Calculus	5
5	09/16/19	Univariate Optimization	6
6	09/23/19	Systems of linear equations	7
7	09/30/19	Matrices	8
8	10/07/19	Determinants and the Inverse Matrix	9
9	10/14/19	Some Advanced topics in Linear Algebra	10
	10/16/19	Exam	
10	10/21/19	Multivariate Calculus	11
11	10/28/19	Multivariate Calculus	11
12	11/04/19	Multivariate unconstrained optimization	12
13	11/11/19	Constrained Optimization	13
14	11/18/19	Comparative statics	14
	11/25/19	Thanksgiving Break	
15	12/02/19	Inequality Constraints and optimization	14,15
	12/04/19	Exam	

Academic Integrity

Academic integrity is fundamental to the activities and principles of a university. All members of the academic community must be confident that each person's work has been responsibly and honorably acquired, developed, and presented. Any effort to gain an advantage not given to all students is dishonest whether or not the effort is successful. The academic community regards breaches of the academic integrity rules as extremely serious matters. Sanctions for such a breach may include academic sanctions from the instructor, including failing the course for any violation, to disciplinary sanctions ranging from probation to expulsion. When in doubt about plagiarism, paraphrasing, quoting, collaboration, or any other form of cheating, consult the course instructor.

Accommodation of Disabilities

Students with Disabilities:

If you anticipate barriers related to the format or requirements of this course, if you have emergency medical information to share with me, or if you need to make arrangements in case the building must be evacuated, please let me know as soon as possible.

If disability related accommodations are necessary (for example, a note taker, extended time on exams, captioning), please establish an accommodation plan with the [MU Disability Cen-](#)

ter, S5 Memorial Union, 573-882-4696, and then notify me of your eligibility for reasonable accommodations. For other MU resources for persons with disabilities, click on “Disability Resources” on the MU homepage.

Intellectual Pluralism

The University community welcomes intellectual diversity and respects student rights. Students who have questions or concerns regarding the atmosphere in this class (including respect for diverse opinions) may contact the departmental chair or divisional director; the director of the [Office of Students Rights and Responsibilities](#); the [MU Equity Office](#), or equity@missouri.edu.

All students will have the opportunity to submit an anonymous evaluation of the instructor(s) at the end of the course.

Academic Inquiry, Course Discussion, and Privacy

University of Missouri System Executive Order No. 38 lays out principles regarding the sanctity of classroom discussions at the university. The policy is described fully in Section 200.015 of the Collected Rules and Regulations. In this class, students may make audio or video recordings of course activity unless specifically prohibited by the faculty member. However, the redistribution of audio or video recordings of statements or comments from the course to individuals who are not students in the course is prohibited without the express permission of the faculty member and of any students who are recorded. Students found to have violated this policy are subject to discipline in accordance with provisions of [section 200.020](#) of the Collected Rules and Regulations of the University of Missouri pertaining to student conduct matters.

Title IX

University of Missouri policies prohibit discrimination on the basis of race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, pregnancy, age, genetic information, disability and protected veteran status. Discrimination includes any form of unequal treatment such as denial of opportunities, harassment, and violence. Sex-based violence includes rape, sexual assault, unwanted touching, stalking, dating/interpersonal violence, and sexual exploitation.

If you experience discrimination, you are encouraged (but not required) to report the incident to the MU Office for Civil Rights & Title IX. Learn more about your rights and options at civilrights.missouri.edu or call 573-882-3880. You also may make an anonymous report online.

Students may also contact the Relationship & Sexual Violence Prevention (RSVP) Center, a confidential resource, for advocacy and other support related to rape or power-based personal violence at rsvp@missouri.edu or 573-882-6638, or go to rsvp.missouri.edu.

Both the [Office for Civil Rights & Title IX](#) and the [RSVP Center](#) can provide assistance to students who need help with academics, housing, or other issues.