

Econ 8370-Mathematics for 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.

Time and Place

During the first two weeks in August: Economics Department Conference Room, 10am-11:30am and 1pm-2:30pm. **First week:** Thursday-Friday. **Second week:** Monday-Friday. **Exceptions:** on Wednesday 8/7 the morning class is canceled due to language testing and on Friday 8/9 the afternoon class is 2pm-3:30pm.

During the regular semester: Economics Department Conference Room, Tuesdays and Thursdays, 2pm-3:15pm. Tentatively until Thursday 10/3.

Instructor

Saku Aura
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Office Hours: TBA
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This course uses Canvas

Textbooks

Further Mathematics for Economic Analysis. Sydsaeter, Hammond, Seierstad and Strom, Prentice Hall, Second Edition, 2008. This book is required.

Mathematical Statistics with Applications. Wackerly, Mendenhall and Scheaffer, Cengage, 7th Edition, 2008. This book is recommended.

The lectures will cover material beyond the material covered in the textbook. Note that this additional material is required for the exams.

Grading

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

Final exam: 50%
Midterm: 35%
Problem sets: 15%

Note that + and – modifiers will be used.

Exams

Midterm Exam Thursday 8/22 (in class) and Final Exam Thursday 10/3 (in class). The final exam is comprehensive.

Problem Sets

I will regularly assign problem sets based on the material we have learned. These problem sets will count for 15% of the course grade. Please return an original (handwritten or typed up) problem set solution on the due date. You may cooperate with your classmates on the problem sets (work in groups, discuss the solutions), but each student should return their own individual answers to problems (do individual write-ups).

Preliminary Lecture Plan

We will almost certainly adjust the dates and topics as we go.

Date		Topic	Textbook Chapter
08/01/19	Thursday	Intro, basic set theory	Appendix A
08/01/19	Thursday	Functions and sequences	Appendix A
08/02/19	Friday	Topics in linear algebra	1
08/02/19	Friday	Topics in linear algebra	1
08/05/19	Monday	Topics in linear algebra	1
08/05/19	Monday	Multivariate calculus topics	2
08/06/19	Tuesday	Multivariate calculus topics	2
08/06/19	Tuesday	Multivariate calculus topics	2
08/07/19	Wednesday	Static optimization ¹	3
08/08/19	Thursday	Static optimization	3
08/08/19	Thursday	Static optimization	3
08/09/19	Friday	Difference equations	11
08/09/19	Friday	Difference equations ²	11
08/20/19	Tuesday	Review – camp homework due	
08/22/19	Thursday	Midterm	
08/27/19	Tuesday	Discrete time optimization	12
08/29/19	Thursday	Discrete time optimization	12
09/03/19	Tuesday	Discrete time optimization	12
09/05/19	Thursday	Intro to probability	WMS2
09/10/19	Tuesday	Discrete random variables	WMS3
09/12/19	Thursday	Continuous random variables & the normal distribution	WMS4
09/17/19	Tuesday	Topology and separation	13
09/19/19	Thursday	Topology and separation	13
09/24/19	Tuesday	Correspondences and fixed points	14
09/26/19	Thursday	Correspondences and fixed points	14
10/01/19	Tuesday	Review	
10/03/19	Thursday	Final exam	

Statement regarding extra credit:

There will be no extra credit assignments in this class.

Late Work and Make-up Policy:

No late work will be accepted. No make-up exams will be given. Exceptions to these general guidelines will be made in verifiable emergency situations.

¹No morning class on 8/7.

²Friday 8/9 afternoon class from 2pm-3:30pm.

Attendance and Participation Policy:

Attendance in class is purely voluntary but strongly recommended. I believe university students should be treated as adults. Past experience tells me that getting a passing grade without a stellar attendance record is very unlikely. If you miss a class for a non-emergency reason it will be solely your responsibility to find out what was covered during that class. Please do not contact me for notes or assignments if you missed a class for a non-emergency reason. For the purpose of this policy participation in a university-sanctioned event such as an intercollegiate athletic event will be treated as an excused emergency.

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 Center](#), 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.