

# Econ 8370-Mathematics for Economics

Department of Economics  
University of Missouri  
Fall 2017

## 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: Wednesday-Friday. Second: Monday-Friday.

During the regular semester: Tuesdays and Thursdays, 12:30pm-1:45pm, Tate Hall 215.

## Instructor

Saku Aura  
Office: Professional Building 232  
Office Hours: TBA  
Phone: 882 6073  
Email: [auras@missouri.edu](mailto:auras@missouri.edu)  
Webpage: <http://faculty.missouri.edu/~auras>

## 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 8/24 (in class) and Final Exam Thursday 9/26 (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
Wednesday 08/02/17	Intro, basic set theory	Appendix A
Wednesday 08/02/17	Functions and sequences	Appendix A
Thursday 08/03/17	Topics in linear algebra	1
Thursday 08/03/17	Topics in linear algebra	1
Friday 08/04/17	Topics in linear algebra	1
Friday 08/04/17	Multivariate calculus topics	2
Monday 08/07/17	Multivariate calculus topics	2
Monday 08/07/17	Multivariate calculus topics	2
Tuesday 08/08/17	Static optimization	3
Tuesday 08/08/17	Static optimization	3
Wednesday 08/09/17	Static optimization	3
Wednesday 08/09/17	Difference equations	11
Thursday 08/10/17	Difference equations	11
Thursday 08/10/17	Discrete time optimization	12
Friday 08/11/17	Discrete time optimization	12
Friday 08/11/17	Discrete time optimization	12
Tuesday 08/22/17	Review – camp homework due	
Thursday 08/24/17	Midterm	
Tuesday 08/29/17	Intro to probability	WMS2
Thursday 08/31/17	Discrete random variables	WMS3
Tuesday 09/05/17	Continuous random variables & the normal distribution	WMS4
Thursday 09/07/17	Topology and separation	13
Tuesday 09/12/17	Topology and separation	13
Thursday 09/14/17	Correspondences and fixed points	14
Tuesday 09/19/17	Correspondences and fixed points	14
Thursday 09/21/17	Review	
Tuesday 09/26/17	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.

### 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 Policy

Academic honesty 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 academic dishonesty as an extremely serious matter, with serious consequences that range from probation to expulsion. When in doubt about plagiarism, paraphrasing, quoting, or collaboration, consult the course instructor.

Academic Dishonesty includes but is not necessarily limited to the following:

1. Cheating or knowingly assisting another student in committing an act of cheating or other academic dishonesty.
2. Plagiarism which includes but is not necessarily limited to submitting examinations, themes, reports, drawings, laboratory notes, or other material as one's own work when such work has been prepared by another person or copied from another person.
3. Unauthorized possession of examinations or reserve library materials, or laboratory materials or experiments, or any other similar actions.
4. Unauthorized changing of grades or markings on an examination or in an instructor's grade book or such change of any grade report.

**Academic Integrity Pledge:** "I strive to uphold the University values of respect, responsibility, discovery, and excellence. On my honor, I pledge that I have neither given nor received unauthorized assistance on this work." Students are expected to adhere to this pledge on all graded work whether or not they are explicitly asked in advance to do so.

The University has specific academic dishonesty administrative *procedures*. Although policy states that cases of academic dishonesty must be reported to the Office of the Provost for possible action, the instructor may assign a failing grade for the assignment or a failing grade for the course, or may adjust the grade as deemed appropriate. The instructor also may require the student to repeat the assignment or to perform additional assignments. In instances where academic integrity is in question, faculty, staff and students should refer to *Article VI of the Faculty Handbook*. Article VI is also available in the *M-Book*. Article VI provides further information regarding the process by which violations are handled and sets forth a standard of excellence in our community.

## **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 register with the Office of Disability Services (<http://disabilityservices.missouri.edu>), S5 Memorial Union, 882-4696, and then notify me of your eligibility for reasonable accommodations. For other MU resources for students with disabilities, click on "Disability Resources" on the MU homepage.

\*Intellectual Pluralism Statement (from Office of the Provost)

The University community welcomes intellectual diversity and respects student rights. Students who have questions concerning the quality of instruction in this class may address concerns to either the Departmental Chair or Divisional leader or Director of the *Office of Students Rights and Responsibilities* (<http://osrr.missouri.edu/>). All students will have the opportunity to submit an anonymous evaluation of the instructor(s) at the end of the course.

## **University of Missouri-Columbia Notice of Nondiscrimination**

The University of Missouri System is an Equal Opportunity/ Affirmative Action institution and is nondiscriminatory relative to race, religion, color, national origin, sex, sexual orientation, age, disability or status as a Vietnam-era veteran. Any person having inquiries concerning the University of Missouri-Columbia's compliance with implementing Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, the Americans With Disabilities Act of 1990, or other civil rights laws should contact the Assistant Vice Chancellor, *Human Resource Services*, University of Missouri-Columbia, 130 Heinkel Building, Columbia, Mo. 65211, (573) 882-4256, or the Assistant Secretary for Civil Rights, U.S. Department of Education.

## **Grievance Policy**

Information concerning student grade appeal procedures and non-academic grievances and appeals may be found in the Student Handbook.