

Course Description

The aim of this course is to introduce the fundamental mathematical tools and methods used for economic analyses. Topics include single- and multi-variable functions, matrix algebra, equilibrium analyses, optimization theory, and their applications in economics.

Time and Place

Room 113, Arts & Science building, TR, 12:30 pm - 1:45 pm

Instructor

Moenes Mellouli
Office hours: Friday 11 – 12 or by appointment (in person or zoom)
Office: W007 Locust Street Building
Email: moenes.mellouli@mail.missouri.edu
This course uses Canvas

Note on COVID-19

Please follow the University's guidance about COVID during lectures. Please note that the schedule and the delivery format of the class are subject to change depending on the COVID-19 situation.

Textbook

Mathematics for Economics, Third Edition, MIT Press by Michael Hoy, John Livernois, Chris McKenna, Ray Rees and Thanasis Stengos (Available on Canvas in a PDF format)

Grading

Plus/minus grades will be used. See the Grade Table (based on 100%). Your grade will be determined by the following: 4 Quizzes (40 pts), Test 1 (45 pts), and Test 2 (45 pts) or Final exam (45 pts)

Quizzes will be administered in class on Thursdays after we finish each module. Quiz dates will be announced in class.

Quiz 1, 2, 3 and 4 will cover modules 1, 2, 3 and 4, respectively.

ECON 4370 students – only best 3 quizzes will be counted. ECON 7370 must take all 4 quizzes.

Test 1 - in class on Thursday March 2nd, 2023

Test 2 - in class on Thursday April 27th, 2023

Final exam (Final's week – Time & location TBA)

ECON 4370 Plus/Minus Grade Table

A: 90%+; A-: 85-89.99%; B+: 80-84.99%; B: 75-79.99%; B-: 70-74.99%; C+: 65-69.99%; C: 60-64.99%; C-: 50-59.99%; D+: 40-49.99%; D: 35-39.99%; D-: below 35%

ECON 7370 Plus/Minus Grade Table

A: 95%+; A-: 94.99-90%; B+: 89.99-85%; B: 84.99-80%; B-: 75-79.99%; C+: 70-74.99%; C: 65-69.99%; C-: 55-64.99%; D+: 50-54.99%; D: 45-49.99%; D-: below 45%

Course Topics

Topic	Textbook Chapter
Introduction	Chapters 2 & 3
Sets, numbers	2.1-2.3
Functions	2.4
Sequences, limits, Present Value	3.1-3.4
Univariate Calculus and Optimization	Chapters 4-6
Continuity	Ch. 4
Differentiation, Differential	5.1, 5.2, 5.4
Covex & concave functions	5.5
Taylor's Formula	5.6
One-variable optimization	Ch. 6
Linear Algebra	Chapters 7-10
Systems of linear equations	Ch. 7
Matrices	Ch. 8
Determinants, inverse matrix	9.1, 9.2
Cramer's rule	9.4
Eigenvalues	10.2
Quadratic forms	10.3
Multivariate Calculus and Optimization	Chapters 11-15
Functions of many variables, partial derivatives	11.1-11.5
Optimization: 1 st - & 2 nd -order conditions	12.1, 12.2
Constrained optimization: Lagrange multiplier method	13.1, 13.2
Comparative statics	Ch. 14
Concave programming: Kuhn-Tucker conditions	Ch. 15
Dynamics	Chapters 18-20
1 st order Difference Equation	18.1
Economic Applications	18.2
2 nd order Difference Equation	20.1

Statement regarding extra credit:

There are no extra credit assignments for this class

Late Work and Make-up Policy:

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

Emergency Related Issues

In case of an emergency, military call-ups, sickness or death in the family affecting attendance the day of an exam and/or a quiz, you will be excused from the exam and/or the quiz if you follow this procedure:

You must provide your justification via e-mail and you must submit proper documentation in a timely manner (e.g., military order in advance, doctor's note upon your return). When you go through a death in the family, you need to send a statement, via e-mail, telling the deceased's name and the relationship to you and provide a copy of the obituary upon your return. Unexcused (i.e., no documentation) missed exams and/or quizzes will be scored as zeros. The excused quiz will be scored as the average of your other quizzes. Your performance on the final exam will replace your test score if you miss any of the tests with an accepted excuse.

[Attendance and Participation Policy:](#)

Attendance in class is purely voluntary but strongly recommended. I believe university students should be treated as adults. Experience tells me that getting a good 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.

[Standard of Conduct for Academic Integrity](#)

In addition, students are expected to adhere to this honor pledge on all graded work whether or not they are explicitly asked in advance to do so: "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 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.

[Acceptable Use](#)

The University of Missouri's Acceptable Use Policy (AUP) for information technology applies to Mizzou websites. The AUP addresses federal and state laws, university regulations, intellectual-property rights, software-licensing requirements and prohibitions against plagiarism and obscenity. This policy applies to all users including faculty, staff, students, and guest users of University of Missouri computer networks, equipment, or connecting resources.

[UM System Acceptable Use Policy](#)

[Copyright](#)

This section helps you understand copyright in course materials, student work and pages published on Mizzou websites.

[UM System Copyright Information](#)

[Executive Order No. 38](#)

When you record something that happens in a course (a lecture, class discussions, meetings, etc.) it has an impact on the rights of the people captured in that recording. For example, your instructor and the University may have rights to the intellectual property contained in that recording. At the same time, another student who may have been recorded has the right to privacy. In order to protect these rights, MU employs a policy (called “Executive Order No. 38”) to govern both situations you may encounter while taking a course--when your instructor allows recordings and when he or she does not allow them.

[Executive Order No. 38](#)

[FERPA](#)

The University of Missouri maintains educational records of students in accordance with the Family Educational Rights and Privacy Act of 1974 (FERPA). Related topics include privacy policies at MU, display of student directory information, and details about how MU manages FERPA-protected information.

[Family Educational Rights and Privacy Act \(FERPA\)](#)

[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, or the MU Equity Office.

[Statement on Intellectual Pluralism](#)

[Statement of Nondiscrimination](#)

The University of Missouri does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, gender identity, age, genetics information, disability, or status as a protected veteran.

[MU Statement of Nondiscrimination](#)

If you experience discrimination or sexual violence, you are encouraged (but not required) to report the incident to the Office of Institutional Equity. Learn more about your rights and options at the [Office of Institutional Equity](#) or by calling 573-882-3880. You also may make an anonymous report online.

If you are a survivor, or someone concerned about a survivor, and need immediate information on what to do, see [RSVP resources page](#). Both the Office of Institutional Equity and the RSVP Center can provide assistance to students who need help with academics, housing, or other issues.

In the event that you choose to write or speak about having experienced any of these forms of prohibited discrimination or harassment, Mizzou policies require that, as your instructor, I share this information with the MU Office of Institutional Equity. They will contact you to offer information about resources, as well as your rights and options as a member of our campus community.

[Mental Health](#)

The University of Missouri is committed to supporting student well-being through an integrated network of care, with a wide range of services to help students succeed. The MU Counseling Center offers professional mental health care, and can help you find the best approach to treatment based on your needs. Call to make an appointment at 573-882-6601. Any student in crisis may call or go to the MU Counseling Center between 8:00-5:00 M-F. After hours phone support is available at 573-882-6601.

Visit our website at <https://wellbeing.missouri.edu/> to take an online mental health screening, find out about workshops and resources that can help you thrive, or learn how to support a friend. Download Sanvello, a phone app that teaches skills and strategies to help you maintain good mental health. Log in with your Mizzou e-mail to unlock all the tools available through Sanvello at no additional cost to you.

[Last date of attendance and impact on financial aid](#)

Federal regulations for financial aid require the student financial aid office to document the attendance of students who have received federal financial aid if they do not successfully complete any courses during the term. As a result, the last day of attendance (or activity) for any student receiving an F, U, or FN in this course will be recorded in the grade roster and reported to the financial aid office. **Based on the last day of attendance, students may be required to repay a portion of their financial aid award for the semester.**

A student's last day of attendance (or activity) is the last day on which a student participates in an academically-related activity at the University. These include:

- Attendance in class, lab, or an instructor's office hours
- The completion of an assignment or examination
- An appointment with a professor or e-mail correspondence regarding course material
- (Online courses only) For online courses, the last day a student submits an assignment or exam. Only logging into an online class without participating is *not* acceptable for last day of attendance

Please note that discussing a course withdrawal or notifying the instructor of an absence in class does not constitute participation for financial aid purposes. Moreover, any office hour visits, or email correspondence must be related to the course material.

[Netiquette](#)

Your instructor and fellow students wish to foster a safe online learning environment. All opinions and experiences, no matter how different or controversial they may be perceived, must be respected

in the tolerant spirit of academic discourse. You are encouraged to comment, question, or critique an idea but you are not to attack an individual. Our differences, some of which are outlined in the University's nondiscrimination statement, will add richness to this learning experience. Please consider that sarcasm and humor can be misconstrued in online interactions and generate unintended disruptions. Working as a community of learners, we can build a polite and respectful course ambiance.

[Religious Holidays & Accommodations](#)

Many religious faiths are represented in the student body. The University of Missouri does not restrict student free exercise of religion, unless 1) the restriction is in the form of a rule of general applicability and does not discriminate against religion or among religions; and 2) it can be demonstrated that the application of the restriction is essential to furthering a compelling university interest, and is not unduly restrictive considering the relevant circumstance. The policy of the University attempts to strike a reasonable balance between accommodating the religious practice of students and meeting academic needs and standard.

Consult IDE's [Guide to Religions](#) for the form that can be used to notify an instructor of an absence associated with religious practice. Students are expected to notify their instructor(s) by completing and submitting this form in a manner that is consistent with the procedure outlined in the university's policy on student religious accommodation. Providing false information regarding sincerely held religious practice is a violation of the university's Standard of Conduct and will not be tolerated.

[Decreasing the Risk of COVID-19 in Classrooms and Labs](#)

If you have tested positive for COVID-19 or have been identified as someone who needs to quarantine, do not attend class in person until the mandated period for isolation or quarantine has passed. Your instructor will work with you on arrangements to access class material while you are in isolation or quarantine.

Additionally, if you are experiencing any COVID-related symptoms, or are otherwise feeling unwell, do not attend in-person classes and contact your health care provider and/or student health immediately. COVID symptoms include fever greater than 100.4 or chills; cough, shortness of breath or difficulty breathing; fatigue; unexplained muscle or body aches; headache; new loss of taste or smell; sore throat; congestion or runny nose; nausea or vomiting; diarrhea.

Please consult [Show Me Renewal](#) for further guidelines. This statement will be updated as information changes. Last updated August 9, 2022

Note: Syllabus content could be changed at any time by the professor and students will be informed of such changes.