

**Econ 4370/7370**  
**Quantitative Economics**  
**Fall 2021**

**Instructor:** Moenes Mellouli  
Graduate Teaching Instructor  
330 Professional Bldg.  
[mmhg7@umsystem.edu](mailto:mmhg7@umsystem.edu)

**OFFICE HOURS:** Thursdays, 12:30 pm – 1:30 pm  
(and by appointment)

### Course Description

The aim of this course is to provide an introduction to 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

Physics Bldg 120, Tuesdays and Thursdays, 11 am - 12:15 pm.

### Instructor

Moenes Mellouli  
Office: Professional Bldg 330  
Office hours: Thursdays 12:30 pm – 1:30 pm or by appointment  
Email: [mmhg7@umsystem.edu](mailto:mmhg7@umsystem.edu)

**This course uses Canvas**

### Note on COVID-19

Please follow the University's guidance about COVID during lectures. This means keeping sufficient distance from other students and wearing a mask. 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

### Grading

Plus/minus grades will be used. See the Grade Table (based on 100%). Your grade will be determined by the following: 4 Quizzes for a total of 40 points, Test 1, 45 pts and Test 2, 65 pts

Quizzes will be given in class: 9/9, 9/23, 10/21, and 11/18. If technology permits, **Quizzes will be taken online via canvas. We may do the same for midterm and final.**

### Plus/Minus Grade Table

A+: 97-100%; A: 93-96.99%; A-: 90-92.99%; B+: 85-89.99%; B: 80-84.99%; B-: 75-79.99%; C+: 70-74.99%; C: 65-69.99%; C-: 60-64.99%; D+: 57-59.99%; D: 53-56.99%; D-: 50-52.99%

### Exams

Test 1 October 7 (during class time) and Test 2 (final's week).

## 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 <sup>st</sup> - & 2 <sup>nd</sup> -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

### 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.

### Emergency Related Issues

In case of an emergency, military call-ups, sickness or death in the family affecting attendance the day of an exam or a quiz, you will be excused from the exam 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 with a copy of the obituary upon your return. Unexcused (i.e., no documentation) missed exams and 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 midterm score if you miss the midterm 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. 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](mailto: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](https://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](mailto:rsvp@missouri.edu) or 573-882-6638, or go to [rsvp.missouri.edu](https://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.