Math 260 2024-2 Syllabus

Course Website: http://ma260.math.metu.edu.tr

Instructors: Section 1: Mehmetçik Pamuk (mpamuk@metu.edu.tr)
Tuesday 15:40-16:30 YP-A2
Thursday 13:40-15:30 YP-A2

Section 2: Mustafa Gökhan Benli (benli@metu.edu.tr)
Tuesday 12:40-13:30 YP-A3
Thursday 13:40-15:30 YP-A3

Section 3: Mahmut Kuzucuoğlu (matmah@metu.edu.tr)
Tuesday 12:40-13:30 U3
Thursday 15:40-17:30 U3

Section 4: Süleyman Önal (osul@metu.edu.tr)
Tuesday 12:40-13:30 P2
Thursday 15:40-17:30 P2

Any questions regarding the course can be sent to **wwwma260@metu.edu.tr**, with **MATH260** in the title and including your **ID NUMBER**

Office hours:

Mehmetçik Pamuk (office : M124)	Wednesday 10:40-12:30
Mustafa Gökhan Benli (office : M227)	Monday 09:30-11:30
Mahmut Kuzucuoğlu (office : M237)	Tuesday 14:40-16:30
Süleyman Önal (office : M234)	Thursday 13:30-15:30
Helproom Servis	TBA

Communication policy:

Important announcements regarding the course will be shared with you on METUCLASS and by email. Thus, it is extremely important that you check METUCLASS and your METU email regularly.

Course Description:

This course aims to provide students majoring in science and engineering with a brief introduction to linear algebra and some of its applications. By the end of the course, students will solve systems of linear equations algorithmically, using Gaussian Elimination; use matrix algebra efficiently and carry out basic proofs; decide whether an abstract set with given operations is a vector space; determine subspaces of a given vector space; find and operate with essential ingredients of a vector space (finding bases, computing dimension, checking linear independence, computing coordinates); compute determinants by cofactor expansions and by row reduction; make computation in inner product spaces, and apply Gram-Schmidt orthogonalization algorithm; compute eigenvalues, eigenvectors of a matrix and use them for diagonalization; find matrix representation of a linear transformation with respect to arbitrary basis and find the new matrix representation under change of basis.

Textbooks: Elementary Linear Algebra, 12th Edition, By Anton Howard and Anton Kaul
Linear Algebra by Cemal KOÇ

Exams: **Midterm I (%30) : March 25, 2025, 18:00**

Midterm II (%30) : May 6, 2025, 18:00

Final (%40) : June 12, 2025, 17:00

Make-Up Exam : After Final Exam

(Tentative) Weekly Schedule: (Section Numbers are from the textbook)

Week	Dates	Topics
1	Feb. 17- 21	1.1 Introduction to Systems of Linear Equations 1.2 Gaussian Elimination
2	Feb. 24-28	1.3 Matrices and Matrix Operations 1.4 Inverses; Algebraic Properties of Matrices
3	March 3-7	1.5 Elementary Matrices and a Method for Finding Inverses 1.6 More on Linear Systems and Invertible Matrices
4	March 10-14	2.1 Determinants by Cofactor Expansion 2.2 Evaluating Determinants by Row Reduction
5	March 17-21	2.3 Properties of Determinants; Cramer's Rule 4.1 Real Vector Spaces
6	March 24-28	4.2 Subspaces 4.3 Spanning Sets 4.4 Linear Independence Midterm-1 March 25 at 18:00
7	March31- April 4	4.5 Coordinates and Bases 4.6 Dimension 4.7 Change of Basis Religious Holiday (March 30-April 1)
8	April 7-11	4.8 Row Space, Column Space, and Null Space 4.9 Rank, Nullity, and the Fundamental Matrix Spaces
9	April 14-18	6.1 Inner Products 6.2 Angle and Orthogonality in Inner Product Spaces
10	April 21-25	6.3 Gram–Schmidt Process 5.1 Eigenvalues and Eigenvectors National Holiday (April 23)
11	April 28- May 2	5.1 Eigenvalues and Eigenvectors 5.2 Diagonalization National Holiday (May 1)
12	May 5-9	7.1 Orthogonal Matrices 7.2 Orthogonal Diagonalization Midterm-2 May 6 at 18:00
13	May 12-16	8.1 General Linear Transformations 8.2 Compositions and Inverse Transformations
14	May 19-23	8.4 Matrices for General Linear Transformations 8.5 Similarity National Holiday (May 19)
15	May 26-30	8.6 Geometry of matrix operators Final Exam June 12 at 17:00

Class Attendance

Attendance during lectures will not be taken. However, you are strongly suggested to attend the lectures.

Make up for Exams and Assignments

You can have at most one make-up exam. In order to be able to take the make-up exam, you must present a reasonable excuse (such as a medical report or an academic leave) when requested.

Eligibility to take the Final Exam and NA Grade

If your two midterm scores (each one out of 100 points) add up to less than 20 points (out of 200 points in total), then you cannot take the Final Exam and will receive an NA grade from the course.

If you did not attend the Final Exam and if you do not have the right to take make-up exam for Final, you will receive an NA grade.

More clearly

(A) Before the final exam, students will be categorized in the following way:

1) M1 + M2 **>=** 20

2) M1 + M2 **<** 20,

for which M1 is the Midterm 1 score out of 100, and M2 is the Midterm 2 score out of 100.

- Students in group **1** will be able to take the final exam.
- Students in group **2** will **NOT** be able to take the final exam. They will get an automatic NA grade.

Examples:

a) Student A attends to Midterm 1 and his score is 20. He/she does not take Midterm 2 being on leave for academic/medical reasons. Since M1+M2 = 20 **>=** 20, He/she is eligible for the final exam. If he/she submits relevant documents, it is also possible to take make-up exam which is given after the final. *No problem at all.*

b) Student B does not attend to Midterm 1 because of their illness. He/she attends to Midterm 2 and get 18 points. Since M1+M2 = 18 **<** 20, he/she won't be able to take final exam and get **NA** grade. **It should be in mind that in this example, taking make-up for Midterm is not possible even if he/she has an appropriate official document (academic/medical report etc.).**

(B) According to the university's rules and regulations governing undergraduate studies (Article 24),

"…The grade NA is designated due to one of the conditions below. The grade NA is processed as FF in the calculation of the Grade Point Average.

1) Not fulfilling the attendance requirements for the theoretical and practical course hours as indicated in the course schedule.

2) Not qualifying to take the final exam due to failure in fulfilling the provisions regarding course practices.

3) Having taken none of the mid-term and final examinations.

…"

Information for Students with Disabilities

Students who experience difficulties due to their disabilities and wish to obtain academic adjustments and/or auxiliary aids must contact ODTU Disability Support Office and/or course instructor and the advisor of students with disabilities at academic departments (for the list:

http://engelsiz.metu.edu.tr/en/advisor-students-disabilities) as soon as possible. For detailed information, please visit the website of Disability Support Office: https://engelsiz.metu.edu.tr/en/

Academic Honesty

The METU Honour Code is as follows: "Every member of METU community adopts the following honour code as one of the core principles of academic life and strives to develop an academic environment where continuous adherence to this code is promoted. The members of the METU community are reliable, responsible and honourable people who embrace only the success and recognition they deserve, and act with integrity in their use, evaluation and presentation of facts, data and documents."