Tarih: 27 Ağustos 2025 21:46

Department of Mathematics Education / Department of Mathematics and Science Education /

Course Code	Course Name	Teorical	Practice	Laboratory	Credits	ECTS
İMEAE 203	LINEAR ALGEBRA 1	2.00	0.00	0.00	2.00	3.00

Course Detail

Course Language	:	Turkish
Qualification Degree	:	Bachelor
Course Type	:	Compulsory
Preconditions	:	Not
Objectives of the Course	:	This course aims to teach the basic concepts of linear algebra such as matrices, determinants, and systems of linear equations.
Course Contents	:	This course covers matrices, operations on matrices, determinants and methods of solving systems of linear equations.
Recommended or Required Reading	:	1. Hüseyin Bilgiç, Lineer cebir ders notları 2. Seymour Lıpschutz , Marc Lars Lıpson , Mc Graw Hill, Lineer Cebir - Linear Algebra - Schaum's, Çeviri Editörü İlker Akkuş, Nobel Akademik Yayıncılık 3. B. Kolman and D.R. Hill, (2018). Elementary Linear Algebra, 9th Edition, Prentice Hall, New Jersey . 4. Checked notebook
Planned Learning Activities and Teaching Methods	:	Lecture; Discussion; Question and Answer;
Recommended Optional Programme Components	:	It is not available
Course Instructors	:	Prof. Dr. Şenol Kartal
Instructor's Assistants	:	It is not available
Presentation Of Course	:	Face to face
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Course Outcomes

Upon the completion of this course a student :

1 Knows the basic concepts of matrix algebra and can apply basic operations defined on matrices.

2 Finds the rank and inverse of a matrix.

3 Expresses some properties of determinant, calculates the determinant of a square matrix.

4 Express the existence of solutions of linear equation systems.

5 Expresses the existence of solutions of linear equation systems. Explains solution methods of linear equation systems.

6 Finds the solution of linear equation system with Gaussian elimination, Gauss-Jordan reduction, inverse matrix and Cramer methods.

Preconditions

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Weekly Contents

	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods	Course Learning Outcomes
1.Week	*Matrix concept			*1. Study the topics "Matrices and Matrix Operations" on pages 4-6 of your reference book.	*Oral presentation; Discussion; Question and Answer	Ö.Ç.1 Ö.Ç.1
2.Week	*Operations on matrices			*1. Study the topics "Algebraic Properties of Matrix Operations" on pages 9-13 in your reference book.	*Oral presentation; Discussion; Question and Answer	Ö.Ç.1 Ö.Ç.1
3.Week	*Operations on matrices			*1. Study the topics "Special Types of Matrices" on pages 11-14 of your reference book.	*Oral presentation; Discussion; Question and Answer	Ö.Ç.1 Ö.Ç.1
4.Week	*Transpose of a matrix and square matrices			*1. Study the "Transpose of the Matrix" topics on pages 6-8 of your reference book.	*Oral presentation; Discussion; Question and Answer	Ö.Ç.1 Ö.Ç.1
5.Week	*Multiplicative inverse of a Matrix			*1. Study the topics "Inverse of a Matrix" between pages 14-16 in your reference book.	*Oral presentation; Discussion; Question and Answer	Ö.Ç.2 Ö.Ç.2
6.Week	*Echelon form of a matrix			*1. Study the topics "Echelon Form of a Matrix" on pages 16-20 of the source book.	*Oral presentation; Discussion; Question and Answer	Ö.Ç.1 Ö.Ç.2 Ö.Ç.1
7.Week	*Elementary operations			*1. Study the topics "Elementary Matrices" between pages 26-30 in your source book.	*Oral presentation; Discussion; Question and Answer	Ö.Ç.1 Ö.Ç.2 Ö.Ç.1
8.Week	*Midterm exam					
9.Week	*Determinant function and its properties			*1. Study the topics "Definition of Determinant and Sarrus Rule" between pages 98-106 in your source book.	*Oral presentation; Discussion; Question and Answer	Ö.Ç.3 Ö.Ç.3
10.Week	*Determinant expansions			*1. Study the topics "Cofactor Expansion" between pages 107-113 in your reference book.	*Oral presentation; Discussion; Question and Answer	Ö.Ç.3 Ö.Ç.3
11.Week	*Adjoint and rank of a matrix			*1. Study the "Additional matrix" topics between pages 109-110 in your source book.	*Oral presentation; Discussion; Question and Answer	Ö.Ç.3 Ö.Ç.1 Ö.Ç.2 Ö.Ç.3
12.Week	*Solving systems of linear equations			*1. Study the topics "Other Applications of Determinants" between pages 111-113 in your reference book.	*Oral presentation; Discussion; Question and Answer	Ö.Ç.4 Ö.Ç.4 Ö.Ç.5 Ö.Ç.6
13.Week	*Solving systems of linear equations			*1. Study the topics "Gauss and Gauss–Jordan Reduction Methods" from pages 20-23 in your reference book.	*Oral presentation; Discussion; Question and Answer	Ö.Ç.5 Ö.Ç.4 Ö.Ç.5 Ö.Ç.6
14.Week	*Solving systems of linear equations			*1. Study the topics "Solving linear equation systems with the help of additional matrices" between pages 23-25 in your source book.	*Oral presentation; Discussion; Question and Answer	Ö.Ç.5 Ö.Ç.4 Ö.Ç.5 Ö.Ç.6
15.Week	*Solving systems of linear equations			*1. Study the topics "Solution of Homogeneous Systems of Equations" between pages 24-26 in your reference book.	*Oral presentation; Discussion; Question and Answer	Ö.Ç.6 Ö.Ç.6 Ö.Ç.4 Ö.Ç.5 Ö.Ç.6

Assesment Methods %

1 Ara Sınav : 40.000

3 Final : 60.000

ECTS Workload

Activities	Count	Time(Hour)	Sum of Workload
Vize	1	1.00	1.00
Final	1	1.00	1.00
Ders Öncesi Bireysel Çalışma	14	2.00	28.00
Ara Sınav Hazırlık	7	2.00	14.00
Final Sınavı Hazırlık	7	2.00	14.00
Ödev	10	2.00	20.00
Ders Sonrası Bireysel Çalışma	14	1.00	14.00
		Total :	92.00
		Sum of Workload / 30 (Hour) :	3
		ECTS :	3.00

Program And OutcomeRelation

	P.O. 1	P.O. 2	P.O. 3	P.O. 4	P.O. 5	P.O. 6	P.O. 7	P.O. 8	P.O. 9	P.O. 10	P.O. 11	P.O. 12	P.O. 13	P.O. 14	P.O. 15	P.O. 16	P.O. 17	P.O. 18	P.O. 19	P.O. 20	P.O. 21	P.O. 22	P.O. 23	P.O.
L.O. 1	1	5	5	1	2	2	5	1	1	5	2	5	2	2	2	3	3	3	0	0	2	0	1	2
L.O. 2	1	5	5	1	2	2	5	1	1	5	2	5	2	2	2	3	3	3	0	0	2	0	1	2
L.O. 3	1	5	5	1	2	2	5	1	1	5	2	5	2	2	2	3	3	3	0	0	2	0	1	2
L.O. 4	1	5	5	1	2	2	5	1	1	5	2	5	2	2	2	3	3	3	0	0	2	0	1	2
L.O. 5	1	5	5	1	2	2	5	1	1	5	2	5	2	2	2	3	3	3	0	0	2	0	1	2
L.O. 6	1	5	5	1	2	2	5	1	1	4	2	5	2	2	2	3	3	3	0	0	2	0	1	2
Avarage	1.00	5.00	5.00	1.00	2.00	2.00	5.00	1.00	1.00	4.83	2.00	5.00	2.00	2.00	2.00	3.00	3.00	3.00	0	0	2.00	0	1.00	2.0

BEWARE OF PLAGIARISM! Please pay attention to proper academic citation rules and avoid plagiarism, an unethical and academically fraudulent behavior, when completing reports, assignments, or other academic works, and it is treated with the same disciplinary action as cheating in a classroom setting. It is imperative to refrain from presenting another person s ideas, language, expressions, or any other form of intellectual property as your own. Regardless of quality, your assignments/projects/research should reflect your original work. Perfection is not a requirement, and in case of any uncertainties regarding academic writing guidelines, you may seek clarification from your course instructor.

Engel Durumu/Uyarlama Talebi : Engel durumuna ilişkin herhangi bir uyarlama talebinde bulunmak isteyen öğrenciler, dersin öğretim elemanı ya da Nevsehir Engelli Öğrenci Birimi ile en kısa sürede iletişime geçmelidir.