TOROS ÜNİVERSİTESİ

Faculty Of Engıneerıng
Computer And Software Engıneerıng

Course Information

LINEAR ALGEBRA					
Code	**Semester**	**Theoretical**	**Practice**	**National Credit**	**ECTS Credit**
		Hour / Week			
MAT201	Fall	3	0	3	4

Prerequisites and co-requisites	MAT103
Language of instruction	English
Type	Required
Level of Course	Bachelor's
Lecturer	Prof. Dr. Adnan MAZMANOĞLU
Mode of Delivery	Face to Face
Suggested Subject	None
Professional practise (internship)	None
Objectives of the Course	An exposure to linear systems and linear relationships. Using matrices to represent linear systems, and vector spaces.
Contents of the Course	systems of linear equations. Matrices, matrix algebra determinants. Vector spaces, subspaces, orthogonal spaces. Charactersitic equation of matrix, eigenvalues, eigenvectors. Cayley-Hamilton Theorem.

Learning Outcomes of Course

#	Learning Outcomes
1	Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied information in these areas to model and solve engineering problems.
2	Ability to identify, formulate, and solve complex engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.
3	Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose. (Realistic constraints and conditions may include factors such as economic and environmental issues, sustainability, manufacturability, ethics, health, safety issues, and social and political issues, according to the nature of the design.)
4	Ability to devise, select, and use modern techniques and tools needed for engineering practice; ability to employ information technologies effectively.
5	Ability to design and conduct experiments, gather data, analyze and interpret results for investigating engineering problems.
6	Ability to work efficiently in intra-disciplinary and multi-disciplinary teams; ability to work individually.
7	Ability to communicate effectively in Turkish, both orally and in writing; knowledge of a minimum of one foreign language.
8	Recognition of the need for lifelong learning; ability to access information, to follow developments in science and technology, and to continue to educate him/herself.

Course Syllabus

#	Subjects	Teaching Methods and Technics
1	Matrices and properties of matrices	Lecturing
2	Determinants, definitions and properties of determinants	Lecturing
3	Linear systems	Lecturing
4	Vector Spaces and subspaces	Lecturing

5	Subspaces, linear dependence, linear independence	Lecturing
6	Null, column, row and zero space of matrix	Lecturing
7	Diagonalization	Lecturing
8	Midterm exam	Exam
9	Inner product spaces, Gram-Schmidt Method	Lecturing
10	Eigenvalues and eigenvectors	Lecturing
11	Linear Transforms	Lecturing
12	Matrix representation of linear transformation, vector space of linear transformation	Lecturing
13	Non-homogeneous linear systems	Lecturing
14	Linear Algebra Applications to Economic and Engineering Problems	Lecturing
15		
16	Final Exam	Exam

Course Syllabus

#	Material / Resources	Information About Resources	Reference / Recommended Resources
1	B. Kolman, D. Hill, Elementary Linear Algebra with Applications		
2			

Method of Assessment

#	Weight	Work Type	Work Title
1	40%	Mid-Term Exam	Mid-Term Exam
2	60%	Final Exam	Final Exam

Relationship between Learning Outcomes of Course and Program Outcomes

#	Learning Outcomes	Program Outcomes	Method of Assessment
1	Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied information in these areas to model and solve engineering problems.	1	1,2
2	Ability to identify, formulate, and solve complex engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.	1	1,2
3	Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose. (Realistic constraints and conditions may include factors such as economic and environmental issues, sustainability, manufacturability, ethics, health, safety issues, and social and political issues, according to the nature of the design.)	1	1,2
4	Ability to devise, select, and use modern techniques and tools needed for engineering practice; ability to employ information technologies effectively.	2	1,2
5	Ability to design and conduct experiments, gather data, analyze and interpret results for investigating engineering problems.	3	1,2
6	Ability to work efficiently in intra-disciplinary and multi-disciplinary teams; ability to work individually.	4	1,2
7	Ability to communicate effectively in Turkish, both orally and in writing; knowledge of a minimum of one foreign language.	5	1,2
8	Recognition of the need for lifelong learning; ability to access information, to follow developments in science and technology, and to continue to educate him/herself.	5	1,2

PS. The numbers, which are shown in the column Method of Assessment, presents the methods shown in the previous table, titled as Method of Assessment.

Work Load Details

#	Type of Work	Quantity	Time (Hour)	Work Load
1	Course Duration	14	3	42
2	Course Duration Except Class (Preliminary Study, Enhancement)	14	2	28
3	Presentation and Seminar Preparation	0	0	0
4	Web Research, Library and Archival Work	0	0	0
5	Document/Information Listing	0	0	0
6	Workshop	0	0	0
7	Preparation for Midterm Exam	1	7	7
8	Midterm Exam	1	1	1
9	Quiz	0	0	0
10	Homework	0	0	0
11	Midterm Project	0	0	0
12	Midterm Exercise	0	0	0
13	Final Project	0	0	0
14	Final Exercise	0	0	0
15	Preparation for Final Exam	1	11	11
16	Final Exam	1	1	1
				90