



T.C.

ESKİŞEHİR OSMANGAZI UNIVERSITY

FACULTY OF SCIENCES

MATHEMATICS AND COMPUTER SCIENCES DEPARTMENT



## COURSE INFORMATION FORM

Course Name	Course Code
Linear Algebra	821612009

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
2	3	0	-	4

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

<b>Prerequisite(s) if any</b>	
<b>Objectives of the Course</b>	The main of the course is to introduce the concepts and techniques involved in the basic topics listed in this lecture and to develop skills in applying those concepts and techniques to the solution of problems
<b>Short Course Content</b>	$R^n$ Standard Vector Space and its subspaces, Linear dependence and linear independence in $R^n$ Standard Vector Space, the bases and dimension, Linear transformations between $R^n$ Standard Vector Spaces, Introduction to the theory of eigenvalues and eigenvectors, $R^n$ inner product space and its properties, the concept of norm.

Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1 Have sufficient knowledge in analytic geometry subjects.	1,2	1,2	A
2 To have sufficient theoretical and practical knowledge about analytic geometry	1,2	1,2	A
3 Develops ability to analyze and solve problems encountered	3,4,5,9	2,10	A
4 Analytical thinking skills develop and the ability to make individual and independent decisions develops.	3,4,5,9	10,11	A
5 The ability to analyze and interpret data, apply interpretation to other data, and apply this information in a computer environment develops.	13	10,11	A
6			
7			
8			

\*Teaching Methods 1:Expression, 2:Discussion, 3:Experiment, 4:Simulation, 5:Question-Answer, 6:Tutorial, 7:Observation, 8:Case Study, 9:Technical Visit, 10:Trouble/Problem Solving, 11:Individual Work, 12:Team/Group Work, 13:Brain Storm, 14:Project Design / Management, 15:Report Preparation and/or Presentation

\*\*Measuring Methods A:Exam, B:Quiz, C:Oral Exam, D:Homework, E:Report, F:Article Examination, G:Presentation, I:Experimental Skill, J:Project Observation, K:Class Attendance; L:Jury Exam

<b>Main Textbook</b>	Lineer Cebir (çeviri), Smith, L. (1993), Anadolu Üniversitesi Yayınları
<b>Supporting References</b>	Lineer Cebir I Çözümlü Problemler ,Ekmekçi, S., Bayar, A., Akça, Z. (2023), Eskişehir Osmangazi Üniversitesi Yayınları
<b>Necessary Course Material</b>	

<b>Course Schedule</b>	
<b>1</b>	$R^n$ Standard Vector Space
<b>2</b>	Subspaces of $R^n$ Standard Vector Space
<b>3</b>	Linear dependence and linear independence in $R^n$ Standard Vector Space
<b>4</b>	Bases and dimension
<b>5</b>	Linear transformations between $R^n$ Standard Vector Spaces
<b>6</b>	Operations on linear transformations
<b>7</b>	Problem solutions
<b>8</b>	Midterm exam
<b>9</b>	The kernel and the image subspaces of linear transformation
<b>10</b>	Matrix representations of linear transformations
<b>11</b>	Endomorphisms
<b>12</b>	Introduction to the theory of eigenvalues and eigenvectors
<b>13</b>	$R^n$ inner product space and its properties
<b>14</b>	Norm in inner product space $R^n$
<b>15</b>	Problem Solving
<b>16,17</b>	Final Exam

<b>Calculation of Course Workload</b>			
<b>Activities</b>	<b>Number</b>	<b>Time (Hour)</b>	<b>Total Workload (Hour)</b>
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,...)	14	3	42
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	20	20
Final Exam	1	2	2
Studying for Final Exam	1	30	30
	<b>Total workload</b>		
	<b>Total workload / 30</b>		
	<b>Course ECTS Credit</b>		<b>4</b>

Evaluation	
Activity Type	%
Mid-term	40
Quiz	
Homework	
Bir öge seçin.	
Bir öge seçin.	
Final Exam	60
<b>Total</b>	<b>100</b>

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	PROGRAM OUTCOME	Contribution
1	The ability to apply knowledges of Mathematics and Computer Sciences,	4
2	To have sufficient theoretical and practical knowledge of Mathematics at international level,	5
3	The ability of describing, modelling and solving of mathematical problems at Mathematics and related subjects,	5
4	The skill to solve and design a problem process in accordance with a defined target,	5
5	Skills to analyze data, interpret and apply to other datum and using these data on computer,	4
6	The skill to use the modern techniques and computational tools needed for mathematical applications,	3
7	The skill to make team work within the discipline and interdisciplinary,	2
8	The ability to improve oneself by following the developments on other modern, scientific and technological subjects as well as Mathematics and Computer Sciences,	2
9	The skill to communicate orally and in written way, in a clear and concise manner by having individual work skills and ability to independently decide and analytical thinking,	4
10	The skill to have professional and ethical responsibility,	2
11	The skill to have consciousness for quality issues and scientific research,	2
12	The skill to be sensitive to environmental issues related with problems and development of living area and consistent in the social relations,	1
13	Ability to solve problems in the working life faced to find an appropriate algorithms via mathematical modeling and to write computer programs,	4
14	The skill to developed design of software systems at different complex levels,	1
15	The credence of necessity of life-long learning and ability to apply the formation long-life learning.	1

LECTUTER(S)				
Prepared by	Prof. Dr. Süheyla EKMEKÇİ Prof. Dr. Ayşe BAYAR Prof. Dr. Ziya AKÇA			
Signature(s)				

Date:17.07.2024