<table>
<tr><th colspan="2">COURSE DESCRIPTION FORM</th></tr>
<tr><td>Course Code and Name</td><td>MAT199 LINEER ALGEBRA</td></tr>
<tr><td>Course Semester</td><td>1</td></tr>
<tr><td>Catalogue Data of the Course (Course Content)</td><td>Matrix algebra, elementary operations and applications, determinants, systems of linear equations and their solutions, systems of linear equations and their solutions, vector spaces, linear dependence and independence, basis and dimension, linear transformations, matrix representations of linear transformations, inner product spaces, matrix norms, eigenvalues and eigenvectors, diagonalization.</td></tr>
<tr><td>Course Textbooks</td><td>Linear Algebra and Its Applications (5th Edition) by David C. Lay, Steven R. Lay, Judi J. McDonald, 2015.</td></tr>
<tr><td>Supplementary Textbooks</td><td>Elementary Linear Algebra, Bernard Kolman, MacMillan Publishing Company, Fourth Edition, 1986.

Uygulamalı Lineer Cebir (7. Baskıdan Çeviri), Bernard Kolman, David R. Hill, Palme Yayıncılık, 2002.</td></tr>
<tr><td>Credit (ECTS)</td><td>4</td></tr>
<tr><td>Prerequisites for the Course (Attendance Requirements)</td><td>-</td></tr>
<tr><td>Course Type</td><td>Compulsory</td></tr>
<tr><td>Language of Instruction</td><td>Turkish</td></tr>
<tr><td>Course Objectives</td><td>To teach the fundamentals of linear algebra and introduce its applications in engineering.</td></tr>
<tr><td>Course Learning Outcomes</td><td>1. Performs operations with matrices.
2. Determinant calculations.
3. Solve a system of equations.
4. Establishes an isomorphism between Linear Transformations and Matrices.
5. Explains the basic concepts of linear transformations.
6. Explains the basic concepts of Eigenvalues and Eigenvectors.
7. Explains diagonalization of matrices and diagonalization applications.</td></tr>
<tr><td>Instruction Method
(Face-to-face, Distance education etc.)</td><td>The mode of delivery of this course is face to face.</td></tr>
<tr><td>Weekly Schedule of the Course</td><td>Week 1: Matrix Algebra
Week 2: Elementary Operations and Applications
Week 3: Determinants
Week 4: Linear Equation Systems and Solutions
Week 5: Linear Equation Systems and Solutions
Week 6: Vector Spaces
Week 7: Linear Dependency and Independence
Week 8: Base and Size
Week 9: Linear Transformations
Week 10: Matrix Representations of Linear Transformations
Week 11: Internal Collision Spaces
Week 12: Matrix Norms
Week 13: Eigenvalues and Eigenvectors
Week 14: Diagonalization</td></tr>
<tr><td>Teaching Activities
(The time spent for the activities listed here will determine the amount of credit required)</td><td>Weekly theoretical course hours: 3
Reading activities
Internet search and library work
Midterm and revision for midterm
Final exam and revision for final exam</td></tr>
<tr><td>Assessment Criteria</td><td>
<table>
<tr><th></th><th>Number(s)</th><th>Weight (%)</th></tr>
<tr><td>Midterm exam</td><td>1</td><td>40</td></tr>
<tr><td>Assignment</td><td>1</td><td>20</td></tr>
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	Application		
	Project		
	Practice		
	Quiz		
	Final exam	1	40
	Total	3	100

Workload of the Course

Activity	Number of Weeks	Duration (Weekly Hour)	End of Semester Total Workload
Weekly theoretical course hours	14	3	42
Weekly practical course hours			
Reading activities	5	3	15
Internet search and library work	5	4	20
Designing and implementing materials			
Making a report			
Preparing and making presentations			
Midterm and revision for midterm	1	10	10
Final exam and revision for final exam	1	13	13
Total workload			100
Total workload/ 25			4
Course Credit (ECTS)			4

Contribution Level between Course Outcomes and Program Outcomes

No	Program Outcomes	1	2	3	4	5
1	Knowledge of mathematics, science, basic engineering, computing, and computer engineering; ability to use this knowledge in solving complex engineering problems.					X
2	Ability to define, formulate and analyze complex engineering problems using basic science, mathematics and engineering knowledge and considering the UN Sustainable Development Goals relevant to the problems addressed.					X
3	Ability to design creative solutions to complex engineering problems; ability to design complex systems, processes, devices, software, algorithms or products to meet current and future requirements, considering realistic constraints and conditions.				X	
4	Ability to select, use and develop appropriate techniques, resources and modern engineering and informatics tools, including estimation and modeling, for the analysis and solution of complex engineering problems while being aware of their limitations.					X
5	Ability to use research methods to examine complex engineering problems or research topics in computer engineering, including reviewing the literature, designing experiments, conducting experiments, collecting data, analyzing and interpreting results.		X			
6	Knowledge of the effects of engineering practices and the standards used in these practices on society, health and safety, economy, sustainability and environment within the scope of the UN Sustainable Development Goals; awareness of the consequences of engineering solutions in the					

		fields of information security and law.					
	7	Acting in accordance with engineering professional principles and knowledge on ethical responsibility; awareness of acting impartially, without discrimination on any issue, and being inclusive of diversity.					
	8	Ability to work effectively individually and as a team member or leader in intradisciplinary and multidisciplinary teams (face-to-face, remote, or hybrid).					
	9	Ability to conduct effective verbal and written communication on technical issues in Turkish or English, prepare reports, make effective presentations and prepare software documentation, considering the various differences of the target audience (such as education, language, profession).					
	10	Knowledge of business practices such as project, risk and change management and economic feasibility analysis; awareness of entrepreneurship and innovation.					
	11	Lifelong learning skill that includes the ability to learn independently and continuously, to adapt to new and developing scientific practices and technologies, and to think inquisitively about technological changes.					
Lecturer(s) and Contact Information	Computer Engineering Department Chair bmbb@gazi.edu.tr						