

# LINEAR ALGEBRA I

1	Course Title:	LINEAR ALGEBRA I
2	Course Code:	MAT1003
3	Type of Course:	Compulsory
4	Level of Course:	First Cycle
5	Year of Study:	1
6	Semester:	1
7	ECTS Credits Allocated:	7.00
8	Theoretical (hour/week):	3.00
9	Practice (hour/week):	2.00
10	Laboratory (hour/week):	0
11	Prerequisites:	-
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Prof. Dr. BASRİ ÇELİK
15	Course Lecturers:	Doç. Dr.Basri ÇELİK- Yrd. Doç.Dr. Atilla AKPINAR- Öğr.Gör.Dr.Esen İYİGÜN
16	Contact information of the Course Coordinator:	E-posta: sciftci@uludag.edu.tr Telefon: +90 224 2941754 Adres: Uludağ Üniversitesi Fen-Edebiyat Fakültesi Matematik Bölümü 16059 Görükle-Bursa-TÜRKİYE
17	Website:	
18	Objective of the Course:	The primary objective of this course is to understand thoroughly (with proofs, algebraic and geometric applications) the basic material on vector spaces and to develop some computational skills in working with linear transformations and the matrices used to represent them
19	Contribution of the Course to Professional Development:	
20	Learning Outcomes:	
	1	gives an understanding of the algebra of finite-dimensional vector spaces as a basis for further study of abstract algebra
	2	acquires an understanding of some fundamental ideas of linear algebra, including vectors, vector spaces, linear independence, bases, dimension and linear transformations especially in the case of $\mathbb{R}^n$ and $\mathbb{C}^n$
	3	enhances your capability for studying abstraction and producing formal mathematical arguments (proofs)
	4	learns some important applications of linear algebra in other mathematical disciplines.
	5	understands the relationship between geometry and linear algebra, including the roles of inner products and orthogonality.
	6	uses the Gram-Schmidt algorithm to orthonormalize a set of vectors.
	7	utilizes linear transformations as mappings from one vector space to another.
	8	finds the change-of-coordinates matrix from a given basis to another.
	9	uses definitions and theorems to prove results in all of the above topics.

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21	Course Content:			
	Course Content:			
Week	Theoretical	Practice		
1	Groups	Solving problem		
2	Fields and subfields	Solving problem		
3	The definition of vector spaces and their examples	Solving problem		
4	Standart vector spaces $R^n$ and $C^n$	Solving problem		
5	Subvector spaces	Solving problem		
6	The properties of vector spaces $R^n$	Solving problem		
7	Midterm exam and evaluation of midterm exam, repeat of previous subjects	Solving problem		
8	Linear independent, the method of orthogonality	Solving problem		
9	The properties about basis of vector spaces, dimensions of subspaces	Solving problem		
10	Space of direct sums and subspaces of inner product spaces	Solving problem		
11	Linear transformations in vector spaces and examples of linear transformation	Solving problem		
Activites		Number	Duration (hour)	Total Work Load (hour)
Theoretical	Linear isomorphism, algebra of $\text{Hom}(V,W)$	14	3.00	42.00
Practicals/Labs		14	2.00	28.00
Self study and preparation		14	5.00	70.00
22	Textbooks, References and/or Other	1	Lineer Cebir, H.Hilmi Hacısalıhoğlu, Ankara, 1985	5.00
Homeworks		0	0.00	0.00
Projects		3	Linear Algebra, Serge Lang, Newyork, 1972	0.00
Field Studies		0	0.00	0.00
Midterm exams		5	Fundamentals of Linear Algebra, Katsumi Nomizu, Publisher	14.00
Others		14	3.00	42.00
Final Exams		0	Linear Algebra with Applications, Gareth Jones and Barlett Publishers, 2001	14.00
Total Work Load				210.00
23 /Assesment				
Total work load/ 30 hr				7.00
ECTS Credit of the Course				7.00
Midterm Exam		1	40.00	
Quiz		0	0.00	
Home work-project		0	0.00	
Final Exam		1	60.00	
Total		2	100.00	
Contribution of Term (Year) Learning Activities to Success Grade		40.00		
Contribution of Final Exam to Success Grade		60.00		
Total		100.00		
Measurement and Evaluation Techniques Used in the Course				
24	ECTS / WORK LOAD TABLE			

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	2	1	2	0	1	2	1	2	2	2	0	0	0	0	0	0
ÖK2	2	2	1	0	2	2	2	1	1	1	0	0	0	0	0	0
ÖK3	3	2	2	0	3	3	2	2	2	2	0	0	0	0	0	0
ÖK10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK9	5	4	4	0	4	3	3	4	4	5	0	0	0	0	0	0
ÖK8	5	4	4	0	4	4	3	5	5	5	0	0	0	0	0	0
ÖK7	3	2	5	0	4	2	3	5	3	4	0	0	0	0	0	0
ÖK6	4	4	3	0	5	3	4	4	3	3	0	0	0	0	0	0
ÖK5	4	3	2	0	3	4	5	3	4	4	0	0	0	0	0	0
LO: Learning Objectives    PQ: Program Qualifications																
Contribution Level:	1 very low			2 low			3 Medium			4 High			5 Very High			