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:	Prof.Dr. Esen İYİGÜN Prof.Dr. Atilla AKPINAR
16	Contact information of the Course Coordinator:	E-posta: basri@uludag.edu.tr Telefon: +90 224 2941762 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:	To understand the role of vector, vector spaces, systems of linear equations, matrices in mathematics.
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 $R^{\wedge}(n)$ and $C^{\wedge}(n)$
	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
14	Linear isomorphism, algebra of Hom(V,W)	Solving problem

| 22 | Textbooks, References and/or Other |

1) Lineer Cebir, H.Hilmi Hacısalihoğlu, Ankara,1985
Ankara, 2002
3) Linear Algebra, Serge Lang, Newyork, 1972
Publisher
5) Fundamentals of Linear Algebra, Katsumi Nomizu,
6) Linear Algebra with Applications, Gareth Williams, Jones and Barlett Publishers, 2001

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	14	2.00	28.00
Self study and preperation	14	5.00	70.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	14.00	14.00
Others	14	3.00	42.00
Final Exams	1	14.00	14.00
Total Work Load			224.00
Total work load/ 30 hr			7.00
ECTS Credit of the Course			7.00

| 23 | Assesment |

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	Homeworks and online exams	

| 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	5	5	2	5	5	2	5	5	2	2	0	0	0	0	0	0
ÖK2	5	5	1	5	5	2	5	5	1	1	0	0	0	0	0	0
ÖK3	5	5	2	5	5	3	5	5	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	5	0	5	5	3	5	5	4	0	0	0	0	0	0	0
ÖK8	5	5	0	5	5	1	5	5	0	0	0	0	0	0	0	0
ÖK7	5	5	1	5	5	2	5	5	3	0	0	0	0	0	0	0
ÖK6	5	5	3	5	5	3	1	5	5	3	0	0	0	0	0	0
ÖK5	5	5	2	5	5	0	5	5	1	2	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			