

VECTORAL ANALYSIS

1	Course Title:	VECTORAL ANALYSIS
2	Course Code:	MAT0538
3	Type of Course:	Optional
4	Level of Course:	First Cycle
5	Year of Study:	4
6	Semester:	7
7	ECTS Credits Allocated:	4.00
8	Theoretical (hour/week):	3.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	0
11	Prerequisites:	None
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Prof. Dr. AHMET TEKCAN
15	Course Lecturers:	
16	Contact information of the Course Coordinator:	Bursa Uludağ Üniversitesi, Fen-Edebiyat Fakültesi Matematik Bölümü, 16059 Görükle Bursa-TÜRKİYE 0 224 294 17 51 tekcan@uludag.edu.tr
17	Website:	
18	Objective of the Course:	The aim of the course is to make the students gain the some algebraic properties on vectorial analysis including, vector, line and plane in R^3 , vector valued functions and theirs limits, derivatives and integrals, partial derivative, differential, tangent plane, linearization, Taylor series expansion, derivative with direction, gradient, arc integrals their applications, Green Theorem and its applications, surface integrals and their applications, Stokes and Divergens-Gauss theorems.
19	Contribution of the Course to Professional Development:	
20	Learning Outcomes:	
	1	The course will be given as verbal exposition theoretically.
	2	Learn the definitions of vector, line, plane and some properties of it in R^3 also learn some properties of vector valued functions including limit, continuity, derivative and integral.
	3	Learn the partial derivatives, differential and chain rule, learn the derivatives with directions and gradient vector.
	4	Learn to calculate arc integrals and some theorems related to arc integrals and applications of Green theorem.
	5	Learn to calculate surface integrals and their application areas also Stokes and Divergens-Gauss theorems.
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21	Course Content:	
	Course Content:	
Week	Theoretical	Practice
1	Overview of basic concepts on lessons	
2	Some properties of vectors in R^3	
3	Line, plane and some properties of them in R^3	
4	Algebra of vector functions, limit and continuity of vector valued functions	
5	Derivatives and integrals of vector valued functions and curvature	
6	Partial derivatives	
7	Differential, differentiable and their applications	
8	Repeating courses and midterm exam	
9	Tangent plane, linearization, chain rule and Taylor series expansion, derivative with direction, gradient vector and their applications	
10	Arc integrals	
11	Applications of arc integrals and some fundamental theorems on arc integrals	
12	Green theorem and its applications	
13	Surface integrals and their applications	
14	Stokes and Divergence-Gauss theorems	
22	Textbooks, References and/or Other Materials:	<p>[1] A. Tekcan, Vektörel Analiz Ders Notları, 2009. [2] A. Tekcan. İleri Analiz. Dora Yayıncılık, 2009. [3] A.I. Khuri. Advanced Calculus with Applications in Statistics, 2003. [4] J. Stewart. Calculus. 5-th Edition, 2007. [5] A.E. Taylor ve W.R. Mann. Advanced Calculus. 3-th Edition, 1983. [6] S.R. Ghorpade ve B. V. Limaye. A Course in Multivariable Calculus and Analysis. Springer, 2010. [7] S. Lange. A First Course in Calculus Addison-Wesley P.C. London, 1980.</p>
23	Assesment	
TERM LEARNING ACTIVITIES		NUMBE R
Midterm Exam		1
Quiz		0
Home work-project		0
Final Exam		1
Total		2
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	

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	4.00	56.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	10.00	10.00
Others	0	0.00	0.00
Final Exams	1	12.00	12.00
Total Work Load			120.00
Total work load/ 30 hr			4.00
ECTS Credit of the Course			4.00

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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK5	0	0	0	0	0	0	0	0	0	0	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			