VECTORIAL ANALYSIS

1	Course Title:	VECTORIAL ANALYSIS
2	Course Code:	MAT0538
3	Type of Course:	Optional
4	Level of Course:	First Cycle
5	Year of Study:	2
6	Semester:	4
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 give the the general informations on vectorial analysis.
19	Contribution of the Course to Professional Development:	To help the learn informations on vectorial analysis.
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	Tangent plane and linearization	
9	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: | [1] A. Tekcan, Vektörel Analiz Ders Notları, 2020.
[2] A.I. Khuri. Advanced Calculus with Applications in Statistics, 2003.
[3] J. Stewart, Calculus, 5-th Edition, 2007.
[6] S. Lange. A First Course in Calculus Addison-Wesley |

| 23 | Assesment |

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	2.00	28.00
Homeworks		0	0.00	0.00
Projects	R	0	0.00	0.00
Field Studies		0	0.00	0.00
Quiz / Midterm exams	0	0.00	25.00	25.00
Others		0	0.00	0.00
Final Exams	1	60.00	25.00	25.00
Total Work Load				120.00
Contribution of Term (Year) Learning Activities to Success Grade / Total work load / 30 hr	40.00			4.00
ECTS Credit of the Course				4.00
Contribution of Final Exam to Success Grade	60.00			
Total		100.00		
Measurement and Evaluation Techniques Used in the Course	The system of relative evaluation is applied.			

| 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	4	2	4	3	3	5	5	5	3	0	0	0	0	0	0
ÖK2	4	3	2	4	3	2	5	5	4	4	0	0	0	0	0	0

ÖK3	5	4	2	4	4	4	4	5	5	4	0	0	0	0	0	0
ÖK4	4	3	2	4	3	2	5	5	4	3	0	0	0	0	0	0
ÖK5	5	3	2	4	3	5	4	5	5	3	0	0	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications				
Contrib ution Level:	1 very low	2 low	3 Medium	4 High	5 Very High