

FRACTAL GEOMETRY

1	Course Title:	FRACTAL GEOMETRY	
2	Course Code:	MAT4085	
3	Type of Course:	Optional	
4	Level of Course:	First Cycle	
5	Year of Study:	4	
6	Semester:	7	
7	ECTS Credits Allocated:	5.00	
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. ESEN İYİGÜN	
15	Course Lecturers:		
16	Contact information of the Course Coordinator:	e-posta: esen@uludag.edu.tr telefon: 0.224.2941766 adres: Uludağ Üniversitesi, Fen-Edebiyat Fakültesi, Matematik Bölümü, 16059, Görükle Kampüsü, Bursa	
17	Website:		
18	Objective of the Course:	The aim of the course is to teach students to fractal geometry with properties, dimension, self-similarity and examples in nature.	
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	Introduces the concept of fractal and teaches history of fractals.
		2	Teaches to obtain new shapes from the usual geometric shapes.
		3	Teaches geometry of transformations in the plane.
		4	Teaches self-similarity which is one of the important properties of fractals.
		5	Teaches how to calculate of the dimension by introducing the concept of dimension in some special fractals.
		6	Teaches the calculation of the length of a fractal curve.
		7	Introduces examples of fractals in nature.
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		10	
21	Course Content:		
		Course Content:	
Week	Theoretical	Practice	
1	Course description, content and history.		
2	Known examples of fractals.		
3	Polygon, circle ve square fractals.		

4	Fill space curves.	
5	Geometry of transformations in the plane.	
6	Self-similarity in fractals.	
7	Dimension in some special fractals.	
8	Midterm and repeating courses.	
9	Koch curve and calculation of dimension.	
10	Minkowski fractal and calculation of dimension, Hausdorff dimension.	
11	Length of a fractal curve, Length paradox of Koch curve.	
12	Calculation dimension with box counting method.	
13	Similarity in size, Moran equation.	
14	Application in nature belonging to fractals.	

22	Textbooks, References and/or Other Materials:	Prof. Dr.H.Hilmi Hacısalihoğlu, Araş.Gör. Nergis Yaz, Fraktal Geometri I, Ankara Üniversitesi Fen Fakültesi, Matematik Bölümü, Ankara, 2007.
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23	Assesment
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TERM LEARNING ACTIVITIES	NUMBER	WEIGHT
Midterm Exam	1	40.00
Final Exam	1	60.00

Activites	Number	Duration (hour)	Total Work Load (hour)
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Theoretical	2	100.00	3.00	42.00
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Practicals/Labs	0	0.00	0.00
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Success Grade			
Self study and preparation	14	4.00	56.00

Homeworks	14	2.00	28.00
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Total Projects	100.00	0.00	0.00
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Field Studies	0	0.00	0.00
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Course			
Midterm exams	1	11 00	11 00

Others	0	0.00	0.00
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Final Exams	1	13.00	13.00
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Total Work Load			150.00
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Total work load/ 30 hr			5.00
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ECTS Credit of the Course			5.00
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25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS
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ÖK5	0	4	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
ÖK6	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK7	4	4	0	4	0	0	0	0	0	0	0	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				