INTRODUCTION TO GEOMETRIC APPLICATIONS

1	Course Title:	INTRODUCTION TO GEOMETRIC APPLICATIONS
2	Course Code:	MAT4097
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:	Doç. Dr. BETÜL BULCA
15	Course Lecturers:	
16	Contact information of the Course Coordinator:	bbulca@uludag.edu.tr
17	Website:	
18	Objective of the Course:	To be able to introduce curves in plane and space and to obtain geometric modeling of curves by using approximation methods.
19	Contribution of the Course to Professional Development:	
20	Learning Outcomes:	

	1	Recall and reinforce the concepts of analytical and differential geometry curves
	2	To comprehend interpolation methods
	3	To understand the difference between Lagrange and Newton Interpolayson methods
	4	To understand the advantages of Hermite interpolation method against other methods
	5	To be able to comprehend the relationship and advantages between spline curves and Bezier curves
	6	To determine the usage areas of Bezier curves
	7	To have information about the places where curves are encountered in daily life and examples of their usage areas
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21	Course Content:	
	Course Content:	
Week	Theoretical	Practice

1	Affine space	
2	Point-vector relations and barisantric coordinates	
3	Curves in plane and space	
4	Linear interpolation method in curves	
5	Polynomial interpolation and 4-point method in curves	
6	Lagrange and Newton polynomial methods	
7	Hermite interpolation method in curves	
8	Spline interpolation method and cubic spline curves	
9	Bezier curves	
10	Bernstein representation of Bezier curves	
11	Characteristics of Bezier curves and their relations with interpolation methods	
12	Subdivision algorithm in Bezier curves	
13	Degree elevation of Bezier curves	
14	B-spline and NURBS curves	

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	2000 G. Farin, J. Hoschek, M. S. Kim, Handbook	of Computer	
Practicals/Labs			
Self study and preperation	D. Salomon, Curves and Surfaces for Computer Graphics, springer Science business media, 2006.		
Homeworks			
Projects	Geometric Design, Springer Verlag, 1990.		
23 Assesment			
Field Studies			
Midterm exams	R		
Others			
Quiz Final Exams	0	0.00	
Total Work Load			
Final Exam Total work load/ 30 hr	60.00		
ECTS Credit of the Course			5.00
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	3	4	1	3	0	0	1	3	0	0	0	0	0	0	0	0
ÖK2	2	3	4	2	0	0	4	0	0	0	0	0	0	0	0	0
ÖK3	1	3	3	3	0	0	3	0	0	0	0	0	0	0	0	0
ÖK4	1	2	3	1	0	0	3	2	0	0	0	0	0	0	0	0
ÖK5	0	2	3	2	0	0	4	3	0	0	0	0	0	0	0	0
ÖK6	2	3	3	2	0	0	4	2	0	0	0	0	0	0	0	0
ÖK7	1	3	4	2	0	0	4	2	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						