

# DIFFERENTIAL AND INTEGRAL CALCULUS I

<b>1</b>	Course Title:	DIFFERENTIAL AND INTEGRAL CALCULUS I	
<b>2</b>	Course Code:	MAT1089	
<b>3</b>	Type of Course:	Compulsory	
<b>4</b>	Level of Course:	First Cycle	
<b>5</b>	Year of Study:	1	
<b>6</b>	Semester:	1	
<b>7</b>	ECTS Credits Allocated:	6.00	
<b>8</b>	Theoretical (hour/week):	4.00	
<b>9</b>	Practice (hour/week):	2.00	
<b>10</b>	Laboratory (hour/week):	0	
<b>11</b>	Prerequisites:	Yok	
<b>12</b>	Language:	Turkish	
<b>13</b>	Mode of Delivery:	Face to face	
<b>14</b>	Course Coordinator:	Prof. Dr. AHMET TEKCAN	
<b>15</b>	Course Lecturers:	Prof.Dr.Osman BİZİM Doç.Dr.Betül GEZER	
<b>16</b>	Contact information of the Course Coordinator:	Uludağ Üniversitesi Fen-Edebiyat Fakültesi Matematik Bölümü 16059 Görükle Bursa-TÜRKİYE 0 224 294 17 51 tekcan@uludag.edu.tr	
<b>17</b>	Website:		
<b>18</b>	Objective of the Course:	The aim of the course is to make the students gain the some algebraic properties single valued functions including, limit, continuity, derivative, theorems on derivatives, applications of derivatives, graphics, indefinite integrals, reducing formulas, definite integrals, improper integrals, applications of integrals, sequences, series, matrices and determinants.	
<b>19</b>	Contribution of the Course to Professional Development:		
<b>20</b>	Learning Outcomes:		
		<b>1</b>	Learn the sets, numbers, relations and functions.
		<b>2</b>	Learn the limit and continuity on single valued functions.
		<b>3</b>	Learn the derivatives of some specific functions.
		<b>4</b>	Learn the applications of derivatives, maximum-minimum problems on single valued functions.
		<b>5</b>	Learn the increasing and decreasing of functions, convex and concave of functions.
		<b>6</b>	Learn the draw the some specific functions.
		<b>7</b>	Learn the indefinite integrals, Riemann sums.
		<b>8</b>	Learn the calculate integrals with change of variables, partial integration, simple fractions and trigonometric change of variables.
		<b>9</b>	Learn the applications of integrals, area, volume, length of arc. Sequence and series, power series and their radius and intervals of convergence.
		<b>10</b>	Learn to matrices, determinants and linear equation systems, Gauss method, inverse matrix method.
<b>21</b>	Course Content:		
		<b>Course Content:</b>	

Week	Theoretical	Practice
1	Overview of basic concepts on lessons, sets, numbers, identities and equations	Solutions in questions of the subjects of theoretical
2	Relations, functions, and function types	Solutions in questions of the subjects of theoretical
3	Limits and continuity	Solutions in questions of the subjects of theoretical
4	Derivates and derivate some specific functions, geometric interpretation of the derivative	Solutions in questions of the subjects of theoretical
5	Increasing-decreasing functions, concavity of curves, maximum and minimum problems of one valued functions	Solutions in questions of the subjects of theoretical
6	Indeterminate forms on limits and L'Hospital rule	Solutions in questions of the subjects of theoretical
7	Graphing functions with calculus	Solutions in questions of the subjects of theoretical
8	Midterm Exam+ Revision of lesson	
9	Indefinite integrals, computing the integrals with change of variables, partial integration, computing the integrals with specific change of variables, trigonometric change of variables	Solutions in questions of the subjects of theoretical
10	Definite integrals, Riemann sums, the fundamental theorem of calculus	Solutions in questions of the subjects of theoretical
11	Approximate integration, improper integrals	Solutions in questions of the subjects of theoretical
12	Applications of definite integrals, area, volume, length of arc, area of surface of revolution, moments and center of mass	Solutions in questions of the subjects of theoretical
13	Sequences, series and power series, radius and intervals of convergence of power series, representations of functions as power series	Solutions in questions of the subjects of theoretical
14	Matrices, determinants and linear equation systems	Solutions in questions of the subjects of theoretical
22	Textbooks, References and/or Other Materials:	[1] O. Bizim, A. Tekcan ve B. Gezer. Genel Matematik, Dora Yayıncılık, 2015. [2] F. Akbulut ve A. Çalışkan. Matematik Analiz Alıştırma ve Problemler Derlemesi, İzmir, 1987. [3] J. Stewart. Calculus, Thomson Pub., 2003. [4] G. Thomas and R. Finney. Calculus and Analytic Geometry Part I, Addison-Wesley Pub. 1994.
23	Assesment	
<b>TERM LEARNING ACTIVITIES</b>		<b>NUMBE R</b>
		<b>WEIGHT</b>
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		
24	<b>ECTS / WORK LOAD TABLE</b>	

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	4.00	56.00
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	12.00	12.00
Others	0	0.00	0.00
Final Exams	1	14.00	14.00
Total Work Load			180.00
Total work load/ 30 hr			6.00
ECTS Credit of the Course			6.00

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	5	5	3	5	5	4	4	3	4	4	3	5	0	0	0	0
ÖK2	5	5	4	5	5	2	4	4	3	4	4	5	0	0	0	0
ÖK3	5	5	3	5	5	3	4	4	3	4	4	5	0	0	0	0
ÖK4	5	5	4	5	5	2	4	4	3	4	4	5	0	0	0	0
ÖK5	5	5	3	5	5	4	4	3	4	4	3	5	0	0	0	0
ÖK6	5	5	4	5	5	2	4	4	3	4	4	5	0	0	0	0
ÖK7	5	5	3	5	5	3	4	4	3	4	4	5	0	0	0	0
ÖK8	5	5	4	5	5	2	4	4	3	4	4	5	0	0	0	0
ÖK9	5	5	3	5	5	3	4	4	3	4	4	5	0	0	0	0
ÖK10	5	5	4	5	5	2	4	4	3	4	4	5	0	0	0	0
<b>LO: Learning Objectives    PQ: Program Qualifications</b>																
<b>Contribution Level:</b>	<b>1 very low</b>			<b>2 low</b>			<b>3 Medium</b>			<b>4 High</b>			<b>5 Very High</b>			