COURSE PROFILE

Course Name	Code	Semester	Term	Theory +PS+Lab. (hour/week)	Local Credits	ECTS
Mathematics I	MATH 103	Fall	1	(3+0+0)	3	5

Prerequisites	None

Course Language	English
Course Type	Required
Course Lecturer	• Assist.Prof. Melike Aydoğan
Course Assistant	• None
Course Objectives	To understand the basic methodologies and principles of elementary calculus and see how it is used in the solution of realistic problems.
Course Learning Outcomes	By the end of the course the students should be able to: 1. prepared for Mathematics II and calculus-based subjects in social sciences, 2. have a knowledge of the fundamental definitions and theorems of elementary calculus, 3. complete routine derivations associated with calculus, recognize elementary applications of differential calculus, and be literate in the language and notation of calculus, 4. demonstrate knowledge of mathematics to construct, analyze and interpret mathematical models, 5. have the skills of appropriate level for modeling and solving complicated mathematical problems arising in various social sciences as well as in economics, business and psychology.
Course Content	Sets of real numbers, functions, special functions. Symmetry, translations and reflections. Lines. Exponential functions, logarithmic functions, properties of logarithms. Continuity. The derivative., Rules for differentiation, Derivatives of logarithmic functions. Derivatives of exponential function., Absolute extrema on a closed interval, Concavity.

COURSE CONTENT

Week	Subjects	Related Preparation
1	Sets of real numbers. Functions, Special functions.	0.1, 2.1, 2.2

2	Combinations of functions. Inverse functions. Graphs in rectangular coordinates.	2.3, 2.4, 2.5
3	Symmetry, translations and reflections. Lines.	2.6, 2.7, 3.1
4	Lines. Quadratic functions.	3.1, 3.3
5	Systems of linear equations, Nonlinear systems.	3.4, 3.5
6	Exponential functions. Logarithmic functions. Properties of logarithms.	4.1, 4.2, 4.3
7	Logarithmic and exponential equations. Limits.	4.4, 10.1, 10.2
8	Continuity. The derivative.	10.3, 11.1
9	Rules for differentiation. Product and quotient rules. The chain rule.	11.2, 11.4, 11.5
10	Derivatives of logarithmic functions. Derivatives of exponential functions.	12.1, 12.2
11	Implicit differentiation. Logarithmic differentiation	12.4, 12.5
12	Higher-order derivatives. Relative extrema	12.7, 13.1
13	Absolute extrema on a closed interval. Concavity.	13.2, 13.3

14	The second derivative test. Asymptotes. Applied maxima and minima.	13.4,13.5, 13.6

Course Textbooks	Introductory Mathematical Analysis (for Business, Economics, and the Life and Social Sciences), 13th Edition, by Ernest F. Haeussler, Jr., Richard S. Paul and Richard J. Wood, Prentice Hall 2011.
Recommended References	

Semester Requirements	Number	Percentage of Grade
Attendance/Participation	-	-
Laboratory	-	-
Application	-	-
Special Course Internship (Work Placement)	-	-
Quizzes/Studio Critics	-	-
Homework Assignments	14	-
Presentation	-	-
Project	-	-
Seminar/Workshop	-	-
Midterms/Oral Exams	2	60
Final/Resit Exam	1	40
Total	17	100

	Number	Percentage of Grade
PERCENTAGE OF SEMESTER WORK	16	60
PERCENTAGE OF FINAL WORK	1	40
Total	17	100

Course Category	Core Courses	X
	Major Area Courses	
	Supportive Courses	
	Media and Managment Skills Courses	
	Transferable Skill Courses	

COURSE'S CONTRIBUTION TO PROGRAM

#	Program Qualifications / Outcomes	* Level of Contribution				
		1	2	3	4	5
1	To have a grasp of basic mathematics, applied mathematics and theories and applications of statistics.					X
2	To be able to use theoretical and applied knowledge acquired in the advanced fields of mathematics and statistics,					X
3	To be able to define and analyze problems and to find solutions based on scientific methods,					X
4	To be able to apply mathematics and statistics in real life with interdisciplinary approach and to discover their potentials,				X	
5	To be able to acquire necessary information and to make modeling in any field that mathematics is used and to improve herself/himself,				X	
6	To be able to criticize and renew her/his own models and solutions,					X
7	To be able to tell theoretical and technical information easily to both experts in detail and nonexperts in basic and comprehensible way,				X	
8	To be able to use international resources in English and in a second foreign language from the European Language Portfolio (at the level of B1) effectively and to keep knowledge up-to-date, to communicate comfortably with colleagues from Turkey and other countries, to follow periodic literature,					X
9	To be familiar with computer programs used in the fields of mathematics and statistics and to be able to use at least one of them effectively at the European Computer Driving Licence Advanced Level,					X
10	To be able to behave in accordance with social, scientific and ethical values in each step of the projects involved and to be able to introduce and apply projects in terms of civic engagement,				X	
11	To be able to evaluate all processes effectively and to have enough awareness about				X	

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	quality management by being conscious and having intellectual background in the universal sense,					
12	By having a way of abstract thinking, to be able to connect concrete events and to transfer solutions, to be able to design experiments, collect data, and analyze results by scientific methods and to interfere,					X
13	To be able to continue lifelong learning by renewing the knowledge, the abilities and the compentencies which have been developed during the program, and being conscious about lifelong learning,			X		
14	To be able to adapt and transfer the knowledge gained in the areas of mathematics and statistics to the level of secondary school,				X	
15	To be able to conduct a research either as an individual or as a team member, and to be effective in each related step of the project, to take role in the decision process, to plan and manage the project by using time effectively.					X

*1 Lowest, 2 Low, 3 Average, 4 High, 5 Highest

ECTS ALLOCATED BASED ON STUDENT WORKLOAD BY THE COURSE DESCRIPTION

Activities	Number	Duration (Hours)	Total Workload
Course Hours (Including Exams)	14	3	48
Tutorials	-	-	-
Laboratory	-	-	-
Application	-	-	-
Special Course Internship (Work Placement)	-	-	-
Field Work	-	-	-
Study Hours Out of Class	14	1	14
Presentations / Seminar	-	-	-
Project	-	-	-
Preparatory reading	13	2	26
Homework Assignments	14	1	14
Quizzes	-	-	-

Midterm Exams	2	7	14
Final / Resit Exam	1	9	9
		Total Workload	125

COURSE CATEGORY

ISCED GENERAL AREA CODES	GENERAL AREAS	ISCED BASİC AREA CODES	BASIC EDUCATIONAL AREAS	
1	Education	14	Teacher Training and Educational Sciences	0
2	Humanities and Art	21	Art	0
2	Humanities and Art	22	Humanities	0
3	Social Sciences, Management and Law	31	Social and Behavioral Sciences	0
3	Social Sciences, Management and Law	32	Journalism and Informatics	0
3	Social Sciences, Management and Law	38	Law	0
4	Science	42	Life Sciences	0
4	Science	44	Natural Sciences	0
4	Science	46	Mathematics and Statistics	100
4	Science	48	Computer	0
5	Engineering, Manufacturing and Civil	52	Engineering	0
5	Engineering, Manufacturing and Civil	54	Manufacturing and Processing	0
5	Engineering, Manufacturing and Civil	58	Architecture and Structure	0
6	Agriculture	62	Agriculture, Forestry, Livestock, Fishery	0
6	Agriculture	64	Veterinary	0
7	Medicine and Welfare	72	Medical	0
7	Medicine and Welfare	76	Social Services	0
8	Service	81	Personal Services	0

8	Service	84	Transport Services	0
8	Service	85	Environment Protection	0
8	Service	86	Security Services	0