HASAN KALYONCU UNIVERSITY
Faculty of Engineering
Course Description Form

COURSE: Calculus I				
CODE: MATH111	**SEMESTER:** FALL			
LANGUAGE: ENGLISH	**TYPE:** COMPULSORY			
PRE-REQUISITES:- **CO-REQUISITES:-**	**THEORY**	**PRACTICAL**	**CREDIT**	**ECTS**
WEEKLY HOURS:	4	0	4	6

CONTENT OF THE COURSE:
Trigonometric, Exponential, Inverse and Logarithmic Functions. Limits. Continuity. Limits Involving Infinity. Derivative, ChainRule. Implicit Differentiation, Derivatives of Inverse Trigonometric Functions. Extreme Values, First Derivative Test. Concavity, Curve Sketching. Integrals, Fundamental Theorem of Calculus. Substitution, Areas, Integration by Parts. Trigonometric Integrals, Trigonometric Substitutions. Integral Techniques.

OBJECTIVE OF THE COURSE:
To learn the concepts and methods of differential and Integral calculus for functions of a real variable. To apply calculus to problems taken primarily from the physical and engineering sciences. The mathematical preparation for higher level mathematics and science courses. An understanding of the logical sequence of advanced mathematics.

WEEKLY SCHEDULE	
Week	**Topics**
1	Lines, Functions, Graphs
2	Trigonometric, Exponential, Inverse and Logarithmic Functions.
3	Limits
4	One Sided Limits, Continuity
5	Limits Involving Infinity
6	Derivative, Chain Rule
7	Implicit Differentiation, Derivatives of Inverse Trigonometric Functions
8	Midterm
9	Extreme Values, First Derivative Test
10	Concavity, Curve Sketching
11	Integrals, Fundamental Theorem of Calculus
12	Substitution, Areas, Integration by Parts
13	Trigonometric Integrals, Trigonometric Substitutions
14	IntegralTechniques

TEXTBOOK:
Thomas, Weir, J. Hass, Thomas' Calculus Early Transcendentals, 13'th Edition, Pearson, 2014, ISBN10 0321884078
REFERENCE BOOKS:
R. Smith andR.Minton, Calculus, ISBN 978-0-07- 338311-8.

EVALUATION SYSTEM:		
IN-TERM STUDIES	**QUANTITY**	**PERCENTAGE (%)**
Midterm Exam	1	45
Homework	0	0
Labworks	0	0
Quiz	0	0
Final Exam	1	55
TOTAL		
CONTRIBUTION OF INTERM STUDIES TO OVERALL GRADE	1	45
CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE	1	55
TOTAL		100

COURSE CATEGORY:	**PERCENTAGE (%)**
Mathematics and Basic Sciences	%60
Engineering	%30
Engineering Design	%10
Social Sciences	%0

TABLE OF ECTS / WORKLOAD:			
Activities	**QUANTITY**	**Duration (Hour)**	**Total Workload**
Course Duration	13	4	52
Hours for off-the-classroom study (Pre-study, practice)	14	9	126
Mid-term	1	2	2
Final examination	1	2	2
Labworks	0	0	0
Quiz	0	0	0
Total Work Load			**182**
Total Work Load / 30			**6,0**
ECTS Credit of the Course			**6**

INSTRUCTOR(S):	Asst. Prof. Dr. Ece Yetkin ÇELİKEL
FORM PREPARATION DATE:	25.11.2019

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**
LO1	3	2	0	3	0	0	0	0	0	0	0

LO2	3	2	0	3	0	0	0	0	0	0	0
LO3	2	3	0	2	0	0	0	0	0	0	0
LO4	2	3	0	2	0	0	0	0	0	0	0
LO5	3	2	0	3	0	0	0	0	0	0	0
	PO: Program Outcomes | LO: Learning Outcomes Values: 0: None | 1: Low | 2: Medium | 3: High										

LEARNING OUTCOMES OF THE COURSE:	**PROGRAM OUTCOMES:**
LO1: A comprehension of mathematics (algebra, differential, integration …) and fundamentals of science LO2:Ability to apply knowledge of mathematics, science and engineering to problems in electronics engineering. LO3:Ability to recognize the needs and challenges of ourage and to assess the global and social impact of engineering solutions LO4:Ability to identify, formulate and solve engineering problems. LO5:Ability to effectively communicate knowledge and opinions via written, oral visual means.	**PO1:** Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied knowledge in these areas in complex engineering problems. **PO2:** Ability to identify, formulate, and solve complex engineering problems; ability to select and apply proper analysis and modeling methods for this purpose. **PO3:** Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose. **PO4:** Ability to devise, select, and use modern techniques and tools needed for analyzing and solving complex problems encountered in engineering practice; ability to employ information technologies effectively. **PO5:** Ability to design and conduct experiments, gather data, analyze and interpret results for investigating complex engineering problems or discipline specific research questions. **PO6:** Ability to work efficiently in intra-disciplinary and multi-disciplinary teams; ability to work individually. **PO7:** Ability to communicate effectively in Turkish, both orally and in writing; knowledge of a minimum of one foreign language; ability to write effective reports and comprehend written reports, prepare design and production reports, make effective presentations, and give and receive clear and intelligible instructions. **PO8:** Recognition of the need for lifelong learning; ability to access information, to follow developments in science and technology, and to continue to educate him/herself. **PO9:** Consciousness to behave according to ethical principles and professional and ethical responsibility; knowledge on standards used in engineering practice. **PO10:** Knowledge about business life practices

	such as project management, risk management, and change management; awareness in entrepreneurship, innovation; knowledge about sustainable development. **PO11:** Knowledge about the global and social effects of engineering practices on health, environment, and safety, and contemporary issues of the century reflected into the field of engineering; awareness of the legal consequences of engineering solutions.