



HASAN KALYONCU UNIVERSITY
Faculty of Engineering
Course Description Form

COURSE: Calculus II					
CODE: MATH112		SEMESTER: SPRING			
LANGUAGE: ENGLISH		TYPE: COMPULSORY			
PRE-REQUISITES:- CO-REQUISITES:-		THEORY	PRACTICAL	CREDIT	ECTS
WEEKLY HOURS:4		4	0	4	6

CONTENT OF THE COURSE:

Antiderivatives, Area and estimating with finite sums, limits of finite sums, the definite integral. Fundamental theorem of calculus, indefinite integrals and substitution. Area between curves. Volumes using cross-sections, volumes using cylindrical shells. Inverse functions and their derivatives, natural logarithms, exponential functions. L'Hospital Rule, Integration by parts, trigonometric integrals, Improper integrals, Sequences, Infinite series, the integral test, Comparison tests, The ratio and root tests. Alternating series, Power series. Taylor and Maclaurin series, Convergence of Taylor series.

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	Antiderivatives, Area and estimating with finite sums, limits of finite sums, the definite integral
2	Fundamental theorem of calculus, indefinite integrals and substitution
3	Area between curves.
4	Volumes using cross-sections, volumes using cylindrical shells.
5	Inverse functions and their derivatives, natural logarithms, exponential functions.
6	L'Hospital Rule, Inverse trigonometric functions
7	Integration by parts, trigonometric integrals
8	MIDTERM
9	Trigonometric substitutions, integration of rational functions by partial fractions
10	Improper integrals, Sequences
11	Infinite series, the integral test
12	Comparison tests, The ratio and root tests
13	Alternating series, absolute and conditional convergence, Power series
14	Taylor and Maclaurin series, Convergence of Taylor series

TEXTBOOK:

Thomas, Weir, J. Hass, Thomas Calculus Early Transcendentals, 13'th Edition, Pearson, 2014, ISBN10 0321884078

REFERENCE BOOKS:R. Smith and R.Minton, Calculus, ISBN 978-0-07- 338311-8.

INSTRUCTOR(S):	Assoc. 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	0	0	0	0	0	0	0	0
LO2	3	2	0	0	0	0	0	0	0	0	0
LO3	2	3	0	0	0	0	0	0	0	0	0
LO4	2	3	0	0	0	0	0	0	0	0	0
LO5	3	2	0	0	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:

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 our age 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.

CONTRIBUTION OF THE COURSE TO VOCATIONAL EDUCATION

With the help of this course, students gain basic knowledge of mathematics to solve problems involving engineering mathematics and formulas..