2020-2021 Fall MATH 117 Calculus I

Frequency: Fall/Spring Terms

METU Credit & ECTS Credit: (4-2)5 & 7.5

Catalog Description: Functions. Limits and Continuity. Tangent lines and derivatives. Chain rule. Implicit differentiation. Inverse functions. Related rates. Linear approximations. Extreme values. Mean Value Theorem and its applications. Sketching graphs. Indeterminate forms and L Hospital s rules. Definite integral. Fundamental Theorem of Calculus. Substitution. Areas between curves. Formal definition of natural logarithm function. Techniques of integration.

Course Coordinator: Ömer Küçüksakallı (komer@metu.edu.tr)

Course Instructors:

Section 1 (recitations sections 1x): Baver Okutmuştur
Section 2 (recitations sections 2x): Ömer Küçüksakallı
Section 3 (recitations sections 3x): Ahmet Beyaz

Course Home Page: http://ma117.math.metu.edu.tr/

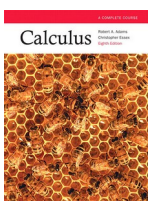
Grading:

•	Exam 1:	November 4, 2020	17:40	15 Points
•	Exam 2:	November 18, 2020	17:40	15 Points
•	Exam 3:	December 2, 2020	17:40	15 Points
•	Exam 4:	December 16, 2020	17:40	15 Points
•	Exam 5:	December 30, 2020	17:40	15 Points
•	Final:	TBA		25 Points

Online Lectures and Exams:

Lectures will be recorded as videos and will be posted weekly to ODTUClass and to the course webpage. The exams 1 through 5, about 30 minutes each, will be conducted in ODTUClass. The time and the method for the final is to be announced.

Suggested Textbook:



Robert A. Adams, Christopher Essex
CALCULUS
A Complete Course Calculus. Eight Edition.
ISBN 978 0-321-78107-9
QA303.2.A33 2013

Reference Books: Calculus, James Stewart, Eight Edition

Week	Dates	Tentative Schedule – Math 117 – 2020Fall(20202021-1)	
1	Oct 12	Ch 0: Preliminaries *0.1 Real Numbers and the Real Line* *0.2 Cartesian* *0.3 Graphs of Quadratic Equations* *0.4 Functions and Their* *0.5 Combining Functions to Make New Functions* *0.6 Polynomials and* *0.7 The Trigonometric Functions*	
2	Oct 19	Ch 1: Limits and Continuity 1.2 Limits of Functions 1.3 Limits at Infinity and Infinite Limits 1.4 Continuity	**Suggested exercises from the textbook** **1.2 :** 2,3,4,5,6,11,13,18,22,24,32,56,58, 61,62,63,64 **1.3 :** 3,6,10,14,20,25,29,33,34,50,51 **1.4:** 1,2,3,4,5,6,9,13,16,18, 22, 30,32
3	Oct 26	Ch 2: Differentiation 2.1 Tangent Lines and Their Slope 2.2 The Derivative 2.3 Differentiation Rules	**2.1 :** 3, 5, 9, 13, 15, 17, 19, 21, 23 **2.2 :** 1, 3, 11, 17, 23, 25, 27, 31, 35, 37, 41, 43, 45, 47, 49 **2.3 :** 7, 9, 11, 13, 15, 17, 23, 25, 29, 33, 37, 39, 43, 49, 51, 53
4	Nov 2	2.4 The Chain Rule 2.5 Derivatives of Trigonometric Functions 2.6 Higher-Order Derivatives **Exam 1: Nov 4 Wednesday**	**2.4 :** 3, 5, 11, 13, 15, 19, 23, 25, 31, 37, 45 **2.5 :** 3, 5, 11, 17, 21, 27, 29, 35, 37, 41, 43, 45, 49, 53, 55, 57, 62 **2.6 :** 1, 7, 11, 13, 21, 25, 26
5	Nov 9	2.9 Implicit Differentiation 2.8 The Mean-Value Theorem	**2.9 :** 3, 7, 9, 11, 13, 17, 21, 27 **2.8 :** 1, 3, 5, 7, 9, 11, 15
6	Nov 16	Ch 3: Transcendental Functions 3.1 Inverse Functions 3.2 Exponential and Logarithmic Functions **Exam 2: Nov 18 Wednesday**	**3.1 :** 3, 9, 12, 17, 19, 23, 26, 29, 34 **3.2 :** 7, 17, 26, 31, 32, 35
7	Nov 23	3.3 The Natural Logarithm and Exponential 3.5 The Inverse Trigonometric Functions	**3.3 :** 5, 8, 13, 17, 33, 35, 41, 44, 48, 52, 57, 59, 63, 65 **3.5 :** 7, 9, 11, 15, 24, 31, 35, 39, 47
8	Nov 30	Ch 4: More Applications of Differentiation 4.1 Related Rates 4.3 Indeterminate Forms **Exam 3: Dec 2 Wednesday**	**4.1 :** 1, 2, 3, 4, 5, 6, 7, 13, 14, 22, 26 **4.3 :** 1, 3, 5, 7, 9, 13, 15, 17, 19, 24, 26, 28
9	Dec 7	4.4 Extreme Values 4.5 Concavity and Inflections 4.6 Sketching the Graph of a Function	**4.4 :** 1, 3, 5, 7, 8, 11, 13, 17, 19, 21, 25, 29, 31, 35, 39 **4.5 :** 1, 3, 5, 7, 9, 11, 13, 14, 16, 17, 19, 25, 27, 29, 31, 35, 39 **4.6 :** 1, 2, 3, 4, 5, 6, 15, 16, 17, 18, 29, 31
10	Dec 14	4.8 Extreme-Value Problems 4.9 Linear Approximations **Exam 4:Dec 16 Wednesday**	**4.8 :** 1, 3, 7, 9, 11, 13, 17, 18, 21, 31, 32, 42 **4.9 :** 1, 3, 5, 7, 9, 11, 15, 17, 21
11	Dec 21	Ch 5: Integration 5.1 Sums and Sigma Notation 5.2 Areas as Limits of Sums	**5.1:** 3, 5, 11, 13, 17, 21, 31, 33 **5.2:** 3, 7, 13, 17, 19
12	Dec 28	5.3 The Definite Integral 5.4 Properties of the Definite Integral **Exam 5: Dec 30 Wednesday**	**5.3:** 2, 3, 5, 7, 11, 13, 15, 17 **5.4:** 1, 2, 7, 9, 11, 13, 15, 17, 19, 21, 25, 29, 31, 35, 36, 37, 39
13	Jan 4	5.5 The Fundamental Theorem of Calculus 5.6 The Method of Substitution	**5.5:** 3, 7, 11, 13, 15, 17, 19, 23, 27, 29, 31, 33, 37, 39, 41, 43, 45, 46, 47, 49, 51, 52, 53, 54 **5.6:** 1, 3, 5, 7, 8, 9, 10, 11, 12, 13, 15, 17, 18, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 40, 41, 43, 44, 45, 47, 48, 49, 50, 51
14	Jan 11	5.7 Areas of Plane Regions	**5.7:** 3, 5, 9, 11, 15, 17, 19, 21, 23, 29
		Final: TBA	