

Spring 2017

MATH 117, Calculus I

Frequency: Fall/Spring Terms

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

Catalog description: Functions, Limits, continuity and derivatives. Applications. Extreme values, the Mean Value Theorem and its applications. Graphing. The definite integral. Area and volume as integrals. The indefinite integral. Transcendental functions and their derivatives. L'Hospital's Rule. Techniques of integration. Applications.

Course Instructor(s):

- Bayer Okutmuştur

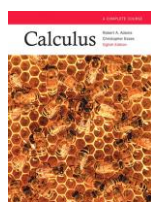
Current Semester Course Home Page:

<http://www.ma117.math.metu.edu.tr>

Grading:

- MidTerm1: 30 Points (April 08 2017, Saturday at 13:30)
- MidTerm2: 30 Points (May 13 2017, Saturday at 13:30)
- Final Exam: 40 Points (June 01 2017, Thursday at 13:30)
- Quizes: 5 Points (During recitations)

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 Book: Calculus, James Stewart, Fifth Edition

Week	Dates	Syllabus (Math 117) 2017-Spring	
1	Feb 20-24	Ch 0: Preliminaries 0.1 Real Numbers and the Real Plane 0.2 Cartesian Coordinates in the Plane 0.3 Graphs of Quadratic Functions 0.4 Functions and Their Graphs 0.5 Combining Functions to Make New Functions 0.6 Polynomials and Rational Functions 0.7 The Trigonometric Functions	
2	Feb 27- March 3	Ch 1: Limits and Continuity 1.2 Limits of Functions 1.3 Limits at Infinity and Infinite Limits	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	March 6-10	1.4 Continuity 1.5 The Formal Definition of Limit	1.5 : 4,6,8,10,12,16,20,27,30, 31,37,38
4	March 13-17	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
5	March 20-24	2.4 The Chain Rule 2.5 Derivatives of Trigonometric Functions 2.6 Higher-Order Derivatives	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
6	March 27-31	2.8 The Mean-Value Theorem 2.9 Implicit Differentiation	2.8 : 1, 3, 5, 7, 9, 11, 15 2.9 : 3, 7, 9, 11, 13, 17, 21, 27
7	April 3-7	Ch 3: Transcendental Functions 3.1 Inverse Functions 3.2 Exponential and Logarithmic Functions Midterm 1 (April 08, Saturday at 13:30)	3.1 : 3, 9, 12, 17, 19, 23, 26, 29, 34 3.2 : 7, 17, 26, 31, 32, 35
8	April 10-14	3.3 The Natural Logarithm and Exponential Functions 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
9	April 17-21	Ch 4: More Applications of Differentiation 4.1 Related Rates 4.3 Indeterminate Forms	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
10	April 24-28	4.4 Extreme Values 4.5 Concavity and Inflections	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
11	May 2-5	4.6 Sketching the Graph of a Function 4.8 Extreme-Value Problems 4.9 Linear Approximations <small>May 1st Labor and Solidarity Day (Monday)</small>	4.6 : 1, 2,3,4,5,6,15,16,17, 18, 29, 31 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
12	May 8-12	Ch 5: Integration 5.1 Sums and Sigma Notation 5.2 Areas as Limits of Sums Midterm 2 (May 13, Saturday at 13:30)	5.1: 3, 5, 11, 13, 17, 21, 31, 33 5.2: 3, 7, 13, 17, 19
13	May 15-18	5.3 The Definite Integral 5.4 Properties of the Definite Integral <small>May 19th Commemoration of Atatürk, Youth and Sports Day (Friday)</small>	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
14	May 22-26	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
Final Exam (June 01 2017, Thursday at 13:30)			