

Fall 2020

MATH 118 Calculus II

Frequency: Fall/Spring Terms

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

Catalog description: Indefinite Integral. Techniques of integration. Arc length. Volumes and surface areas of solids of revolution. Improper integrals. Sequences and infinite series. Power series. Taylor series. Vectors and analytic geometry in 3-space. Functions of several variables: Limits, continuity, partial derivatives, chain rule, directional derivatives, tangent plane and linear approximations. Extreme values. Lagrange multipliers. Double integrals.

Course instructors: Gökhan Benli (benli (at) metu.edu.tr)

Course teaching assistants: TBA

Course Home Page: <https://ma118.math.metu.edu.tr/>

Grading: TBA

Suggested textbook:



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

Reference Books: Calculus, James Stewart, Eight Edition

Week	Dates		
1	October 12-16	Ch 6: Techniques of Integration 6.1 Integration by Parts 6.2 Integrals of Rational Functions	6.1: 5, 7, 10, 11, 13, 15, 17, 19, 21, 23, 25, 27, 28, 29, 33, 37 6.2: 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31
2	October 19-23	6.3 Inverse Substitutions 6.5 Improper Integrals	6.3: 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 44, 45, 47, 49, 51 6.5: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 24, 25, 31, 33, 35, 37, 39, 41, 42
3	October 26-30	Ch 7: Applications of Integration 7.1 Volumes by Slicing—Solids of Revolution 7.2 More Volumes by Slicing	7.1: 1, 3, 7, 11, 13, 15, 19 7.2: 3, 5, 7, 9, 11, 13, 16
4	November 2-6	7.3 Arc Length and Surface Area Ch. 9: Sequences, Series, and Power Series 9.1 Sequences and Convergence	7.3: 3, 5, 7, 9, 11, 13, 14, 21, 24, 25, 27, 28, 29 9.1: 6, 8, 10, 17, 18, 19, 24, 26, 29, 31, 35
5	November 9-13	9.2 Infinite Series 9.3 Convergence Tests for Positive Series	9.2: 4, 6, 8, 10, 12, 14, 26, 27, 28, 29, 30, 31 9.3: 4, 6, 12, 16, 18, 20, 24, 26, 38, 42
6	November 16-20	9.4 Absolute and Conditional Convergence 9.5 Power Series	9.4: 2, 4, 8, 10, 16, 20, 24, 27 9.5: 4, 8, 10, 13, 14, 17, 18, 22, 26, 28, 30
7	November 23-27	9.6 Taylor and Maclaurin Series 9.7 Applications of Taylor and Maclaurin Series	9.6: 6, 8, 12, 18, 22, 26, 34, 35, 40 9.7: 6, 7, 12, 16, 18, 24
8	November 30-December 4	Ch. 10: Vectors and Coordinate Geometry in 3-Space 10.1 Analytic Geometry in Three Dimensions 10.2 Vectors	10.1: 6, 19, 22, 27, 32, 36, 40 10.2: 4, 13, 16, 18, 22, 26, 31
9	December 7-11	10.3 The Cross Product in 3-Space 10.4 Planes and Lines 10.5 Quadric Surfaces	10.3: 3, 5, 14, 15, 17, 20, 23 10.4: 3, 6, 9, 18, 23, 26, 28, 29 10.5: 3, 5, 8, 10, 12, 15, 17, 20, 21
10	December 14-18	Ch. 12: Partial Differentiation 12.1 Functions of Several Variables 12.2 Limits and Continuity	12.1: 4, 5, 8, 12, 13, 14, 20, 24 12.2: 2, 6, 8, 10, 12, 14, 18
11	December 21-25	12.3 Partial Derivatives 12.5 The Chain Rule 12.6 Linear Approximations	12.3: 4, 5, 6, 11, 12, 16, 17, 21, 24, 28, 31, 36, 39 12.5: 4, 8, 16, 18, 29, 30 12.6: 4, 6, 10, 16
12	December 28-January 1	12.7 Gradients and Directional Derivatives Ch. 13: Applications of Partial Derivatives 13.1 Extreme Values	12.7: 4, 8, 10, 17, 18, 19, 22, 26, 36 13.1: 1, 3, 6, 7, 9, 11, 17, 19, 24, 26
13	January 4-8	13.2 Extreme Values of Functions Defined on Restricted Domains 13.3 Lagrange Multipliers	13.2: 3, 5, 7, 8, 9, 11, 17 13.3: 1, 3, 5, 7, 9, 11, 19, 21, 22
14	January 11-15	Ch. 14: Multiple Integration 14.1 Double Integrals 14.2 Iteration of Double Integrals in Cartesian Coordinates	14.1: 5, 13, 15, 18, 19 14.2: 1-27 odd