

MATH 118

Calculus II

Course Number and Title: MATH 118, Calculus II

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

Catalogue Description: Techniques of Integration. Arc Length. Volumes and Surface Areas of Solids of Revolutions. 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 planes and linear approximations. Extreme values. Lagrange multipliers. Double integrals.

Course Objectives: The sequence Math 117-118 is the standard complete introduction to the concepts and methods of calculus. The emphasis is on concepts, solving problems, theory and proofs. All sections are given uniform midterms and a final exam. Students will develop their reading, writing and questioning skills in Mathematics.

Prerequisites: Math 117

Course Coordinator: Hasan Taşeli

MidTerm1:	30 Points (April.06 2019 Saturday at 09:30)
MidTerm2:	30 Points ((May 4, 2019, Saturday at 09:30)
Final Exam:	40 Points (May 24, 2019, Friday at 09:30)
Quiz/Attendance:	5+2=7 Points

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, Fifth Edition

Current Semester Course Home Page: <http://ma118.math.metu.edu.tr/>

Week	Dates	Syllabus(Math 118) 2018-2019 Spring	Suggested Problem List
1	February 11-15 Advisor Approvals	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	February 18-22	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 7.1: 1, 3, 7, 11, 13, 15, 19
3	February 25 - March 1	Ch 7: Applications of Integration 7.1 Volumes by Slicing—Solids of Revolution 7.2 More Volumes by Slicing 7.3 Arc Length and Surface Area	7.1: 1, 3, 7, 11, 13, 15, 19 7.2: 3, 5, 7, 9, 11, 13, 16 7.3: 3, 5, 7, 9, 11, 13, 14, 21, 24, 25, 27, 28, 29
4	March 4-8	Ch. 9: Sequences, Series, and Power Series 9.1 Sequences and Convergence 9.2 Infinite Series	9.1: 6, 8, 10, 17, 18, 19, 24, 26, 29, 31, 35 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
5	March 11-15	9.3 Convergence Tests for Positive Series 9.4 Absolute and Conditional Convergence	9.3: 4, 6, 12, 16, 18, 20, 24, 26, 38, 42 9.4: 2, 4, 8, 10, 16, 20, 24, 27
6	March 18-22	9.5 Power Series 9.6 Taylor and Maclaurin Series 9.7 Applications of Taylor and Maclaurin Series	9.5: 4, 8, 10, 13, 14, 17, 18, 22, 26, 28, 30 9.6: 6, 8, 12, 18, 22, 26, 34, 35, 40 9.7: 6, 7, 12, 16, 18, 24
7	March 25 -29	Ch. 10: Vectors and Coordinate Geometry in 3-Space 10.1 Analytic Geometry in Three Dimensions	10.1: 6, 19, 22, 27, 32, 36, 40
8	April 1-5 Midterm 1	10.2 Vectors 10.3 The Cross Product in 3-Space 10.4 Planes and Lines ☺Midterm 1 (April 06 2019 Saturday at 09:30)	10.2: 4, 13, 16, 18, 22, 26, 31 10.3: 3, 5, 14, 15, 17, 20, 23 10.4: 3, 6, 9, 18, 23, 26, 28, 29
9	April 8-12	10.5 Quadric Surfaces Ch. 12: Partial Differentiation 12.1 Functions of Several Variables 12.2 Limits and Continuity	10.5: 3, 5, 8, 10, 12, 15, 17, 20, 21 12.1: 4, 5, 8, 12, 13, 14, 20, 24 12.2: 2, 6, 8, 10, 12, 14, 18
10	April 15-19	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
11	April 22-26	12.7 Gradients and Directional Derivatives <i>April 23, 2015 National Holiday (National Sovereignty and Children's Day)</i>	12.7: 4, 8, 10, 17, 18, 19, 22, 26, 36
12	April 29 – May 3 Midterm 2	Ch. 13: Applications of Partial Derivatives 13.1 Extreme Values 13.2 Extreme Values of Functions Defined on Restricted Domains <i>May 1, 2015 Labor and Solidarity Day (Friday)</i> ☺Midterm 2 (May 04 2019 Saturday at 09:30)	13.1: 1, 3, 6, 7, 9, 11, 17, 19, 24, 26 13.2: 3, 5, 7, 8, 9, 11, 17
13	May 6-10	13.3 Lagrange Multipliers Ch. 14: Multiple Integration 14.1 Double Integrals	13.3: 1, 3, 5, 7, 9, 11, 19, 21, 22 14.1: 5, 13, 15, 18, 19
14	May 13-17	14.2 Iteration of Double Integrals in Cartesian Coordinates	14.2: 1-27 odd
15	May 20	14.2 Iteration of Double Integrals in Cartesian Coordinates ☺Final Exam (May 24 2019 at 09:30)	14.2: 1-27 odd