

Math 301 Calculus II

Text: *Calculus: Single Variable*, 4th edition, Hughes-Hallett, Gleason, and McCallum, Wiley, 2005

Prerequisites: Math 270 with a grade of C or better, or transfer credit in an equivalent course from another university.

Calculus is a branch of mathematics which for over three centuries has served as the basis for the analysis of continuous change. Applying calculus to real-life problems in science, engineering, or other fields requires both an understanding of how the mathematics can be used to model problems, and the capability of performing the calculations and computations necessary to obtain solutions. The textbook concentrates on the most important topics of calculus (limits, derivatives, integrals, etc.), but with emphasis on the graphical and numerical representation of functions and other relations as well as the traditional use of symbolic formulas. The materials in our text are meant to be read thoroughly and carefully. The writing is plain and straight-forward. While the text does contain some routine "drill" exercises, the authors have included other types of in-depth problems designed to develop conceptual understanding. A number of the problems are intended to be discussed by students working together in small groups. This new approach to calculus is enhanced by the availability of new technology, which can heighten our understanding of mathematical relationships. In this course, the graphing calculator will be the standard tool for visualization and numerical computation.

This syllabus is an outline for 47 class periods of Calculus II. An additional 9 class periods will be devoted to special presentations, group activities, review and testing.

Lesson	Section and Topic	Assignment
1	6.1 Antiderivatives Graphically and Numerically	1, 2, 4, 5, 8, 9, 11, 12, 14, 16, 19, 22, 23
2	6.2 Constructing Antiderivatives Analytically	1,2,4,6,7,9,11,12,14,16,17,19,21,22,24,26,27,29,31,32,33,34,36,37,39,41,42,48,49,50,51
3	6.2 (cont.)	53,55,56,58,60,61,63,65,66,68,69,71,72,76,77,80,82,83,87
4	6.3 Differential Equations	2,3,5,6,9,10,11,13,14,15,18,20,23
5	6.4 Second Fundamental Theorem of Calculus	1,3,5,8,9,10,13,15,16,18,23,24,25,33,34
6	6.5 The Equations of Motion	1,2,3,4,5,6,7,8
7	7.1 Integration by Substitution	2,3,5,6,10,11,14,16,17,18,19,20,22,24,26
8	7.1 (cont.)	28,29,31,33,34,36,38,39,41,45,46,48,51
9	7.1 (cont.)	53,54,56,58,60,61,63,65,66,67,69,71,72,77,78,84,87,89
10	7.2 Integration by Parts	1,2,6,8,10,12,15,16,18,19,21,23,25
11	7.2 (cont.)	26,30,31,32,33,34,37,38,39,40,42,46,48,53,54,55
12	7.3 Tables of Integrals	2,4,7,8,14,19,20,23,25,27,29,31,32,33
13	7.3 (cont.)	34,37,42,45,47,48
	7.4 Algebraic Identities and Trigonometric Substitutions	2,3,6,9,10,13,15,17,19
14	7.4 (cont.)	25,27,28,32,42,43,44,46,50,52,56,59
	7.5 Approximating Definite Integrals	1,2,5,6,7,8,9
15	7.5 (cont.)	12,13,15,18,20,22,23
	7.6 Approximation Errors and Simpson's Rule	1,2,3,4,6,7
16	7.7 Improper Integrals	1,2,4,5,6,8,10,11,15,18,21,27,28,33,38,44
17	7.8 Comparison of Improper Integrals	1,4,5,8,10,11,13,17,18,22,23,27,28
18	Review	Practice
19	Review	Practice
20	8.1 Areas and Volumes	1,2,4,5,7,9,10,11,12,15,16,18
21	8.1 (cont.)	19,20,24,25,28
	8.2 Applications to Geometry	2,3,5,6,9,12,18
22	8.2 (cont.)	19,22,24,26,28,30,32,36,39,41
23	8.3 Area and Arc Length in Polar Coordinates	1,2,5,6,8,9,10,13,17,18,19,20,24,25,26,28,36,37
	8.4 Density and Center of Mass	1,2,3,5,6,9,10,11,12,15
24	8.4 (cont.)	18,19,23,24
	8.5 Applications to Physics	1,4,6,9
25	8.5 (cont.)	10,12,17,20,23,25,27
26	8.6 Applications to Economics	1,2,4,6,10,12
27	8.7 Distribution Functions	2,6,9,10,11,13,17,18

Lesson	Section and Topic	Assignment
28	8.8 Probability, Mean and Median	1,2,3,4,7,9,14
29	9.1 Sequences	1,2,3,5,8,10,11,14,15,17,19,21,22,23,24,28
30	9.2 Geometric Series	2,5,7,8,10,12,14,16,18,19,20,21
31	9.2 (cont.)	25,28,29
	9.3 Convergence of Series	1,2,11,12,13,16,33
32	9.4 Tests for Convergence	1,2,4,5,7,10,12,15,17,20
33	9.4 (cont.)	21,28,33,35,37,39,41,43,44,52
	9.5 Power Series and Interval of Convergence	1,2,3,4,5
34	9.5 (cont.)	7,8,11,12,15,18,21,22,24,25,32,35
35	10.1 Taylor Polynomials	1,3,8,9,11,14,16,18,19,22,25,26
36	10.1 (cont.)	29,30,33,35
	10.2 Taylor Series	2,4,6,7,10,13,16,18,21,22
37	10.2 (cont.)	24,26,31,32,37,40,43
38	10.3 Finding and Using Taylor Series	2,4,7,8,10,11,14,15,16
39	10.3 (cont.)	26,29,30,36,38
	10.4 The Error in Taylor Polynomial Approximations	1,5,7,8
40	10.4 (cont.)	10,12,13,15,19
41	11.1 What is a Differential Equation?	1,3,5,6,8,10,13,15
42	11.2 Slope Fields	1,2,7,8,10
43	11.3 Euler's Method	1,4,5,6,7
44	11.4 Separation of Variables	1,3,6,7,8,10,12,13,14,16,17,19,20,21,23,25,27
45	11.4 (cont.)	28,29,31,32,35,36,37,39,41,42,44,45
46	11.5 Growth and Decay	1,2,3,4,7,8,11,15,19,21,23
47	11.6 Applications and Modeling	1,3,4,7,9,11,12,14,19,22,24

Emergency Evacuation Procedure: A map of this floor is posted near the elevator marking the evacuation route and the **Designated Rescue Area**. This is an area where emergency service personnel will go first to look for individuals who need assistance in exiting the building. Students who may need assistance should identify themselves to the teaching faculty.

Last updated 27 January 2006.