

King Fahd University of Petroleum and Minerals
 Department of Mathematical Sciences
SYLLABUS
 Semester II, 2003-2004 (032)
 Prepared by: Dr. A. Shawky Ibrahim

Course #: Math 102
Title: Calculus II
Textbook: Calculus (Early Transcendentals) by H. Anton, I. Bivens, and S. Davis, seventh edition (2002)
Course Objectives: To introduce definite and indefinite integrals. Applications of the definite integral to area, volume, arc length and surface of revolution. Techniques of integration. Improper integrals. Sequences and series, convergence tests: integral, comparison, ratio, and root tests. Alternating series. Absolute and conditional convergence. Power series. Taylor and Maclaurin series.

Week	Date	Sec. #	Topics
1	Feb 14-18	6.1 6.2	An Overview of the Area Problem The Indefinite Integral; Integral Curves
2	Feb 21-25	6.3 6.4	Integration by Substitution Sigma Notation; Area as a Limit
3	Feb 28-Mar 03	6.5 6.6*	The Definite Integral The Fundamental Theorem of Calculus*
4	Mar 06-10	6.8 6.9	Evaluating Definite Integrals by Substitution Logarithmic Functions from the Integral Point of View
5	Mar 13-17	7.1 7.2	Saturday, March 13, 2004: Suggested Time for Major Exam I Area Between Two Curves Volumes by Slicing; Disks and Washers
6	Mar 20-24	7.3 7.4	Volumes by Cylindrical Shells Length of a Plane Curve
7	Mar 27-31	7.5 7.8	Area of a Surface of Revolution Hyperbolic Functions and Hanging Cables (pp. 509 -513 only)
8	Apr 03-07	8.2** 8.3	Integration by Parts** Trigonometric Integrals
9	Apr 10-14	8.4 8.5	Trigonometric Substitutions Integrating Rational Functions by Partial Fractions
10	Apr 17-21	8.6 8.8	Special Substitutions (only pp 558 – 560) Improper Integrals Wednesday, April 21, 2004: Suggested Time for Major Exam II
11	Apr 24-28	10.1 10.2	Maclaurin and Taylor Polynomial Approximations (till page 644) Sequences
12	May 01-05	10.3 10.4	Monotone Sequences Infinite Series
13	May 08-12	10.5 10.6	Convergence Tests The Comparison, Ratio, and Root Tests
14	May 15-19	10.7 10.8***	Alternating Series; Conditional Convergence Maclaurin and Taylor Series; Power Series***
15	May 22-26	10.10	Differentiating & Integrating Power Series; Modeling with Taylor Series Review and/or catching up

* Include pp. 434 - 435 of sec. 6.7 (The Average Value of a Continuous Function).

** Students are advised to go over sec. 8.1 before they start chapter 8.

*** Include pp. 707 – 708 of sec. 10.9 (The Binomial Series and Table 10.9.1).

- The suggested dates for Major Exams I and II are given by the College of Sciences in order to avoid any conflicts with other exams.
- The date and place of the final examination will be announced by the Registrar. The final exam is usually comprehensive.
- KFUPM policy with respect to attendance (**lectures and recitations**) will be enforced.

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Suggested Homework and Recitation Problems

Sec. #	Suggested Homework Problems	Suggested Recitation Problems
6.1	2,8,11,16	6,14,18
6.2	8(a,b),12,18,22,30,32,34,44,48,54	11,24,27,33,42(b,c),46,49,55(b)
6.3	4,12,18,25,26,30,46,47,52,54(a,b)	6,20,23,40,44,48,67
6.4	2(a,b,e),7,10(b,c),12,18,24,30,42,54	10(a,d),15,20,26,40,49,55(a)
6.5	2,6,10(b),16(c),20,22,24(b),28	4,8,14,19,26,32,34
6.6	7,13,22,24,31,40,50,53,59	8,23,26,32,39,48,55,61,66
6.7	60,62	61
6.8	4,9,17,20,30,38,45,55,70(a)	10,15,21,32,50,69
6.9	2,4(b,c),10,12,18,25,34,42	3(a,b),16,22,39,43
7.1	3,8,13,18,31,44	6,14,32,36
7.2	4,12,14,23,30,31,37	9,25,29,32,39
7.3	2,6,16,21,28	4,8,24
7.4	8,10,13	4,14
7.5	2,7,18,21,24	8,25
7.8	4,5(a),12,17,32,37,50	3,16,33,38,67
8.2	4,12,20,28,40,50,54(b)	6,14,24,26,38,47,53(b)
8.3	3,14,28,47,52,55	4,16,33,49,51
8.4	2,9,17,24,41,44	8,20,29,42,45
8.5	3,11,21,31,34,36	12,30,33,41
8.6	58,61,71,72	60,66,70
8.8	1,6,9,16,18,25,31,40,44,52	4,15,24,32,62
10.1	5,10,13,15,24	11,12,18,25,34
10.2	6,14,20,22,28,32	10,12,16,26,30,37
10.3	6,8,11,16,20,25	5,10,13,23,27
10.4	2,5,8,11,18,24(c),25(a),29,32	9,14,20,23(b),26,33
10.5	2(a),3(a),5(a,d),8(b),22,26	3(b), 5(c),9,14,19,20,28
10.6	1(a),3(b),5,12,17,29,33,45	4(b),6,16,20,34,40,42
10.7	5,9,14,22,28,33,36,46	6,12,17,30
10.8	2,5,16,17,22,23,29,30,42,47,49,53	10,18,20,28,44
10.9	17(b,c)	
10.10	2(c,d),6,9(b),11,15,22(b),25,28(a)33	8,10,16,26,34

The above problems are considered as a minimum set of problems. Students are encouraged to solve more problems than the above list. The students are also advised to attempt the recitation problems before the recitation session.