King Fahd University of Petroleum and Minerals
Department of Mathematical Sciences
SYLLABUS
Semester II, 2003-2004 (032)

Course #: Math 102
Title: Calculus II
Instructor: **Dr. Hattan Tawfiq** (office 5- 419, Phone 1931, Email: hattan@kfupm.edu.sa)
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: Major Exam I (Bld 6-125 at 7:30 pm)** 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: Major Exam II (Bld 6-125 at 8:00 pm)**
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 date and place of the final examination will be announced by the Registrar. The final exam is 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	2,5,16,17,22,23,29,3042,47,49,53	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.