

King Fahd University of Petroleum and Minerals  
Department of Mathematical Sciences  
**SYLLABUS**

Semester I, 2005-2006 (051)

Prepared by: Dr. Nasser-eddine Tatar

**Course #:** Math 102  
**Title:** Calculus II  
**Textbook:** Calculus (Early Transcendentals) by H. Anton, I. Bivens and S. Davis, 7<sup>th</sup> Edition, 2002.

Course Description: Definite and indefinite integrals. Fundamental Theorem of Calculus. Techniques of integration. Hyperbolic functions. Applications of integration. Improper integrals. Sequences and series: convergence tests. Alternating series. Absolute and conditional convergence. Power series. Taylor and Maclaurin series.

Week	Date	Sec. #	Topics
1	Sept. 10-14	6.1 6.2	An Overview of the Area Problem The Indefinite integral: Integral Curves
2	Sept. 17-21	6.3 6.4	Integration by Substitution Sigma Notation: Area as a Limit
3	Sept. 25*-28	6.5 6.6	The Definite Integral The Fundamental Theorem of Calculus
4	Oct. 01-05	6.7 6.8 6.9	Average Value (pp. 434-435 only) Evaluating Definite Integrals by Substitution Logarithmic Functions from the integral Point of View
5	Oct. 08-12	7.1 7.2	Area Between Two Curves Volumes by Slicing: Disks and Washers <i>Exam I is on Tuesday Oct. 11, 2005.</i>
6	Oct. 15-19	7.3 7.4	Volumes by Cylindrical Shells Length of a Plane Curve
7	Oct. 22-26	7.5 7.8	Area of a Surface of Revolution Hyperbolic Functions and Hanging Cables(pp. 509-513 only)
<b><i>Eid Al-Fitr Break: Oct. 27 – Nov. 11, 2005</i></b>			
8	Nov. 12-16	8.2 8.3	Integration by Parts Trigonometric Integrals
9	Nov. 19-23	8.4 8.5	Trigonometric Substitutions Integrating Rational Functions by Partial Fractions
10	Nov. 26-30	8.6 8.8	Special Substitutions (pp. 558-560 only) Improper Integrals
11	Dec. 03-07	10.1 10.2	Maclaurine and Taylor Polynomial Approx. (till p. 644) Sequences
12	Dec. 10-14	10.3 10.4	Monotone Sequences Infinite Series <i>Exam II is on Monday Dec. 12, 2005.</i>
13	Dec. 17-21	10.5 10.6	Convergence Tests The Comparison, Ratio and Root Tests
14	Dec. 24-28	10.7 10.8	Alternating Series; Conditional Convergence Maclaurin and Taylor Series; Power Series
15	Dec. 31-Jan. 04	10.9 10.10	The Binomial Series & Table 10.9.1 (pp. 707-708 only) Differentiating and Integrating Power Series
<b><i>Eid Al-Adha Break: Jan. 05 – Jan. 20, 2005</i></b>			
16	Jan. 21		Revision and catching up

1. Students are advised to go over Sec. 8.1 before they start Sec. 8.2.
2. KFUPM policy with regard to attendance (**lectures and recitations**) will be enforced.

\* September 24, National Holiday

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 Math 102, Semester 051

**Suggested Homework and Recitation Problems**

Sec. #	Suggested Homework Problems	Suggested Recitation Problems
6.1	2,,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),15,20,26,44,49,55(a)
6.5	2,6,10(b),16(c),20,22,24(b),28	4,8,14,19,26,32
6.6	7,13,22,24,31,40,50,53,59	23,26,32,39,55,61
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	4,12,14,23,31,31,37	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	2,7,14,18,23,28,38,41(a),46,54(a)	12,20,24,27,37,41(b),57(b,c)
8.3	8,11,21,30,41,51	15,32,44,50,64
8.4	2,9,17,24,41,44	8,20,42,45
8.5	3,11,21,31,34	12,30,33,41
8.6	58,61,71,72	60,66,70
8.8	1,6,9,16,18,25,31,44,52	4,15,24,32,62
10.1	3,7,14,22,23,25,34	11,18,21,26,35
10.2	2,6,10,11,20,21,26,30,31,37,40	8,12,16,22,36,43
10.3	5,10,15,23,27	11,17,22,28,30
10.4	1,3,10,13,17,23(a),24(b),25(c),27,30	9,14,20,23(b),25(b),26,33
10.5	1,4(a,d),7(b),12,16,25,29(a,c)	2(b),5(d),21,29(b)
10.6	3(a),4(a),9,11,19,32,38,43	2,8,28,44,51
10.7	5,9,14,22,26,33,37,46	6,12,17,30
10.8	2,5,16,17,22,24,29,35,44,53	10,18,20,28,38,47
10.9	17(b,c)	
10.10	2(c,d),6(d),7(a),9(a),11,15,25,27(a),33(a)	8,10,16,26,34(b)

The above list of problems is considered a minimum list. Students are strongly encouraged to solve more problems than what are given above. Students are also advised to attempt the recitation problems before the recitation session. Remember that “The best way to learn **Mathematics is to do Mathematics.**”