King Fahd University of Petroleum and Minerals
Department of Mathematical Science
Summer Semester, 2005-2006 (053)

Math 101 - Syllabus

Title : Calculus I
Textbook : Calculus (Early Transcendentals): by J. Stewart; 5th edition, 2003
Objectives : To introduce the student to basic concepts and methods of Calculus. Topics include: Limits and continuity of functions of a single variable. Differentiability. Exponential, Logarithmic, Hyperbolic and inverse trigonometric functions. Applications: Related rates, Local linear approximation, Differentials, Curve sketching and Applied optimization problems.

Week	Date	Sec.	Topics
1	June 24-June 28	2.1	The Tangent Problem: **Example 1**.
		2.2	The Limit of a Function
		2.3	Calculating Limits Using the Limit Laws
		2.4	The Precise Definition of a Limit (**finite limits only**)
2	July 01-July 05	2.5	Continuity
		2.6	Limits at Infinity; Horizontal Asymptotes
		2.7	Tangents, Velocities, and Other Rates of Change
		2.8	Derivatives
3	July 08-July 12	2.9	The Derivative as a Function
		3.1	Derivatives of Polynomials and Exponential Functions
		3.2	The Product and Quotient Rules
		3.3	Rate of Change in Physics: **Example 1**.
		3.4	Derivatives of Trigonometric Functions
			Major Exam 1 **Tuesday, July 11th (Ch. 2)** **7:00 – 10:00 PM** **OAB-Auditorium**
4	July 15-July 19	3.5	The Chain Rule
		3.6	Implicit Differentiation
		3.7	Higher Derivatives
5	July 22–July 26	3.8	Derivatives of Logarithmic Functions
		3.9	Hyperbolic Functions
		3.10	Related Rates
		3.11	Linear Approximations and Differentials
6	July 29–August 2	4. 1	Maximum and Minimum Values
		4.2	The Mean Value Theorem
		4.3	How Derivatives Affect the Shape of a Graph
		4.4	Indeterminate Forms and L'Hospital's Rule
			Major Exam 2 **Tuesday, Aug. 1st (Ch. 3)** **7:00 – 10:00 PM,** **OAB-Auditorium**
7	August 5-August 9	4.5	Summary of Curve Sketching
		4.7	Optimization Problems
		4.9	Newton's Method
		4.10	Antiderivatives
8	August 12–August 14		**Catch-up and Review**
Final Exam: Tuesday, August 15th at 7:00 p.m.			

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Math 101
Homework & Recitation Problems

	Homework Problems	Graded H.W.	Recitation
2.2	6,7,9,14,17,27,30,34,35,38	14,34,38	4,13,28,32
2.3	2,7,15,18,19,21,26,29,37,41,42,49,56,58	18,42,58	1,10,14,22,38,50
2.4	3,5,6,28,32,34,36	28,32,34	2,13,16,30,39
2.5	3,7,11,12,15,16,19,29,34,39,42,51,52,59,60	12,34,42	6,10,18,24,38,43,46,54
2.6	1(a),3(b)(e),4(c)(e),5,8,12,19,24,26,29,34,37,42,47,49,54	34,42,54	4,6,18,33,46,49,53,6
2.7	2,6,8,15,18,19,20,24	6,18,24	2,10,12,25
2.8	3,4,8,15,18,19,22,24,26,30	18,22,30	1,6,17,21,28
2.9	2,4,8,10,13,16,20,27,45	10,16,20	3,11,18,30,33,43
3.1	1(b),23,30,36,40,41,46,47,50,56	30,40,50	24,33,42,45,52,55
3.2	5,9,10,15,17,21,26,32,36,37	10,26,32	9,20,31,35,38
3.4	3,10,15,18,24,25,28,30,33,41,45	10,18,24	7,13,23,26,42
3.5	3,9,11,18,27,31,39,40,46,49,52,55(a),58,63(a)	18,40,58	14,38,42,45,54,63(d)
3.6	1,11,14,19,20,22,24,25,42,46,55	14,20,46	10,15,21,28,59
3.7	2,8,15,26,32,33,36,40,44,54,60	26,40,54	3,31,37,38,47,61
3.8	3,4,6,8,17,22,25,30,31,37,41,48,50	22,30,48	12,19,24,28,32,46,49
3.9	3,4,14,17,20,23,29(d),34,37,43,51,53	14,20,34	6,19,29(b),46,49,52
3.10	4,5,8,9,12,18,21,25,37,38	8,12,18	1,6,11,15,33
3.11	6,8,17,26,28,35,38,43,45,49	8,26,38	7,23,36,42,50
4.1	4,8,10,25,30,42,44,50,58,69	30,44,58	14,38,40,48,70,76
4.2	4,6,12,14,18,24,26,28	24,26,28	2,5,16,20,27,29
4.3	1,6,8,16,18,20,44,46,74	20,44,46	11,36,50,64
4.4	2,4,14,22,24,19,48,58,68	48,58,68	3,13,21,30,42,50
4.5	19,26,30,34,37,47,50,52,64,69	----------	22,36,65,68
4.7	6,10,12,27,33,35,44,52,55,56	----------	22,46,57,61(a)
4.9	13,18,19,31,35,38	----------	6,16,37
4.10	14,38,42,46,48	----------	40,45,62

- Please do all the homework assignments on time, but turn in only the graded problems.
- **The <u>best 15 H.W. grades</u>** will be considered. The rest will be dropped.

Tips on how to enhance your problem-solving abilities:

1. You are urged to practice (but not memorize) more problems than the above lists.
2. You should always try to solve a problem on your own before reading the solution or asking for help.
3. If you find it difficult to handle a certain type of problems, you should try more problems of that type.
4. You should try the recitation problems before coming to class.
5. You are encouraged to solve some of the review problems at the end of each chapter.
6. The practice you get doing homework and reviewing the class lectures and recitations will make exam problems easier to tackle.