King Fahd University of Petroleum and Minerals
Department of Mathematical Science
SYLLABUS
Semester I, 2004-2005 (**041**)

Course #: Math 101
Title: Calculus I
Instructor **Dr. Hattan Tawfiq** (office 5-419, Phone 1931, Email: hattan@kfupm.edu.sa
Office Hours S, U, M, T, W (8:50 – 9:50 am)
Textbook: Calculus (Early Transcendentals): by H. Anton, I. Bivens, and S. Davis; seventh edition (2002)
Objectives: To introduce the student to basic concepts and methods of Calculus. Topics include: Limits and continuity. The Derivative. Exponential, logarithmic and inverse trigonometric functions. Applications: Related rates, Local linear approximation, Differentials, Graphing and Applied optimization problems.

Weeks	Dates	Secs.	Topics
1	Sept 11-15	2.1	Limits (An Intuitive Approach)
2	Sept 18-**23***	2.2 2.3	Computing Limits Computing Limits (End Behavior)
3	Sept 25-**30****	2.4 2.5	Limits (Discussed More Rigorously) Continuity
4	Oct 02-06	2.6 3.1	Limits and Continuity of Trigonometric Functions Slopes and Rates of Change
5	Oct 09-13	3.2	The Derivative
Major Exam I: Tuesday, October 12, 2004. Room 6 - 125 7:00 pm			
6	Oct 16-20	3.3 3.4	Techniques of Differentiation Derivatives of Trigonometric Functions
7	Oct 23-27	3.5 3.6	The Chain Rule Implicit Differentiation
8	Oct 30-Nov 03	3.7 3.8	Related Rates Local Linear Approximation; Differentials
Eid Al-Fitr Vacation			
9	Nov 20-24	4.1 4.2	Inverse Functions Exponential and Logarithmic Functions
10	Nov 27-Dec 01	4.3	Derivatives of Logarithmic and Exponential Functions
Major Exam II: Tuesday, November 30, 2004. Room 6 -125 6:30 pm			
11	Dec 04-08	4.4 4.5	Inverse Trigonometric Functions and Their Derivatives L'Hopital's Rule; Indeterminate Forms
12	Dec 11-15	5.1 5.2	Analysis of Functions I: Increase, Decrease and Concavity Analysis of Functions II: Relative Extrema; First and Second Derivative Tests
13	Dec 18-22	5.3 5.4	Analysis of Functions III: Applying Technology and the Tools of Calculus Rectilinear Motion (Motion Along a Line)
14	Dec 25-29	5.5 5.6	Absolute Maxima and Minima Applied Maximum and Minimum Problems (Optimization)
15	Jan 01-03	5.7 5.8	Newton's Method Rolle's Theorem; Mean-Value Theorem

* **Thursday, Sept 23 : Normal Tuesday Classes. ** Thursday, Sept 30 : Normal Wednesday Classes**.

- The date, time and the place of the Final Examination will be announced by the Registrar. The Final Exam is Comprehensive.
- Attendance is compulsory. KFUPM policy with respect to attendance will be strictly enforced.

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Homework and Recitation Problems and CAS Assignments

Secs.	Homework Problems	*CAS Assignments	Recitation Problems
2.1	2, 10, 14, 15, 31	29	6, 12, 13, 32,
2.2	2, 7, 10, 15, 20, 36, 38	---	1, 3, 8, 16, 17, 34, 40
2.3	16, 18, 26, 27, 32	---	2, 6, 8, 11, 20, 29, 31
2.4	11, 21, 48	---	12, 22, 72
2.5	20, 22, 24, 27, 29, 43	31	19, 23, 26, 30, 42
2.6	9, 10, 23, 24, 26, 30, 35, 40	*Example # 3(a,b)*	2, 8, 14, 18, 21, 28, 42
3.1	1, 8, 11, 18	---	2, 6, 13, 20
3.2	1, 3, 10, 16, 25, 28, 45, 46	31	2, 4, 5, 11, 14, 23, 41, 43, 47
3.3	6, 8, 12, 18, 20, 22, 40, 44, 51, 61	56	14, 24, 26, 43, 49, 60, 65
3.4	6, 17, 22, 25(b), 27(a), 37(i)	---	8, 10, 23, 29(b), 37(g)
3.5	4, 10, 22, 32, 43, 55, 72	41, 42	2, 13, 16, 25, 38, 47, 54, 70
3.6	12, 22, 25, 28, 30, 36, 47	33, 35	19, 24, 31, 40, 46
3.7	3, 8, 10, 13, 14, 25, 29, 40	---	12, 17, 26, 32, 37
3.8	2, 5, 10, 21, 27, 28, 37, 41, 53,	---	4, 6, 19, 23, 30, 42, 54
4.1	1(a,b), 8, 12, 16, 18, 26, 46	---	5, 11, 24, 40, 45
4.2	6, 18, 21, 22, 30, 34, 57	38, 39	12, 15, 16, 24, 33, 35, 58
4.3	7, 14, 18, 29, 31, 34, 35, 42, 45, 48, 50, 57	---	3, 4, 8, 30, 32, 33, 38, 40, 47
4.4	8, 11, 12, 27, 29, 32	--	2, 5, 7, 13, 24, 28, 31
4.5	1, 8, 11, 18, 27, 32, 33, 49, 51	42, 47	2, 12, 16, 23, 35, 39, 40
5.1	4, 7, 15, 18, 22, 26	42	2, 6, 8, 17, 25, 35
5.2	8, 9, 19, 22, 34, 36, 53	54	5, 12, 15, 17, 23, 32, 36
5.3	3, 14, 23, 34, 44, 53, 58, 67	---	4, 18, 24, 38, 50, 68
5.4	2, 3, 12, 20	---	4, 14, 18, 38
5.5	7, 12, 21, 25, 38, 43	---	5, 14, 20,. 31, 41
5.6	3, 4, 6, 9, 22, 29, 51	---	2, 8, 19, 49, 55
5.7	3, 6, 27, 31	20	2, 4, 8, 24
5.8	7, 8, 13, 20, 26, 37, 46	---	6, 16, 31, 38

* Computer Algebra Systems **(CAS)**: Mathematica, Matlab, Maple, …, etc. See Section 1.3 of the textbook for details. Also refer to pages vii and xi for details about the *Calculus Resource CD* packaged with the textbook.