King Fahd University of Petroleum and Minerals
Department of Mathematics & Statistics
Math 101 – Syllabus
2014-2015 (141)
Coordinator: Dr. Bader Al Humaidi
Instructor: Dr. Hattan Tawfiq

Title: Calculus I

Credit: 4-0-4

Textbook: Thomas Calculus (Early Transcendentals) by G. Thomas, M. Weir and J. Hass. 12th edition, Pearson (2010).

Description: To introduce the student to basic concepts and methods of Calculus. Topics include: Limits, continuity and differentiability of functions of a single variable. Exponential, Logarithmic, trigonometric and inverse trigonometric functions. Applications: Related rates, Local linear approximation, Differentials, Curve sketching and Applied optimization problems. Area and Estimating with finite sums.

Grading Policy:

1. **Exam I** A common written exam	**Material:**2.1-3.1	**Place:** Building 54	25% (100 points)
	Date: Sunday, Oct. 19, 2014	**Time: 5:45-7:15 PM**	
2. **Exam II** A common multiple choice exam	**Material:**3.2-3.11	**Place:** Building 54	25% (100 points)
	Date: Sunday, Nov. 23, 2014	**Time: 5:45-7:45 PM**	
3. **Final Exam** A comprehensive common multiple choice exam	**Material:** Comprehensive	**Place:** Building 54	35% (140 points)
	Date: Tuesday, Dec. 30, 2014	**Time: 7:00-10:00 PM**	
4. **Class Work**	**i) Online Homework:** The web address for online homework is **kfupm.mylabsplus.com**		5% (20 points)
	ii) Class Activities: They are based on quizzes, class tests, or other class activities determined by the instructor. Any quiz or test under class activity should be of written type and not of multiple choice type. The average x (out of 40) of class activities of the sections taught by the same instructor must be in the interval [24, 30].		10% (40 points)

Exam Questions:
The questions of the common exams are based on the examples, homework problems, recitation problems and the exercises of the textbook.

Missing Exam I or Exam II:
No makeup exam will be given under any circumstance. When a student misses Exam I or Exam II for a legitimate reason (such as medical emergencies), his grade for this exam will be determined based on the existing formula which depends on his performance in the non-missed exam and in the final exam.

Attendance:
Attendance is a University Requirement. A DN grade will be awarded to any student who accumulates 12 unexcused absences (lecture and recitation).

Academic Integrity: All KFUPM policies regarding ethics apply to this course.

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Week	Dates (2014)	Sec.	Topics
1	Aug.31- Sep 04	2.1	Rates of Change and Tangents to Curves
		2.2	Limit of a Function and Limits Laws
2	Sep. 07-11	2.2	Continued
		2.3	The Precise Definition of a Limit (Up to the end of Example 4)
3	Sep. 14-18	2.4	One-Sided Limits
		2.5	Continuity
4	Sep. 21-25	2.6	Limits Involving infinity; Asymptotes of Graphs
			Tuesday, September 23, 2014 **(National Day Holiday)**
Eid Al- Adha Vacation Sep. 26- Oct. 11 (2014)			
5	Oct. 12-16	3.1	Tangents and the Derivative at a point (+ Vertical Tangents, P. 125)
		3.2	The Derivative as a function
6	Oct. 19-23	**Exam I**	**Sunday, Oct.19, 2014 [5:45-7:15 PM]** **Building 54; Material [2.1-3.1]**
		3.3	Differentiation Rules
		3.4	The Derivative as a rate of Change
7	Oct. 26-30	3.5	Derivatives of Trigonometric Functions
		3.6	The Chain Rule
8	Nov. 02-06	3.7	Implicit Differentiation
		3.8	Derivatives of Inverse Functions and Logarithms
9	Nov. 09-13	3.9	Inverse Trigonometric Functions
		3.10	Related Rates
10	Nov. 16-20	3.11	Linearization and Differentials
		4.1	Extreme Values of Functions
11	Nov. 23-27	**Exam II**	**Sunday, Nov. 23, 2014 [5:45-7:45 PM]** **Building 54; Material [3.2- 3.11]**
		4.2	The Mean Value Theorem
		4.3	Monotonic Functions and the first Derivative Test
12	Nov 30- Dec.04	4.4	Concavity and Curve Sketching
		4.5	Indeterminate Forms and L'Hospital's Rule
13	Dec. 07 - 11	4.6	Applied Optimization
		4.7	Newton's Method
14	Dec. 14 - 18	4.8	Antiderivatives
		5.1	Area and Estimating With Finite Sum
15	Dec. 21 - 25	5.2	Sigma Notation and Limits of Finite Sums
	December 28	**Normal Tuesday classes (Review)**	
	Final Exam: Dec. 30, 2014 [7:00-10:00 PM] **Building 54; Material: Comprehensive**		

Homework & Recitation Problems

Section	Homework Problems	Recitation Problems	CAS*
2.1	4, 10, 21	2, 8	18, 20
2.2	4, 8, 18, 32, 40, 47, 54, 60, 66, 71, 77, 79	3, 10, 28, 51, 65	68
2.3	10, 14,16, 35, 38, 40	12, 13, 19, 37	-
2.4	4, 9, 16, 20, 28, 29, 34, 42	2, 5, 12, 24, 30	-
2.5	8, 15, 24, 26, 30, 37, 40, 48, 72, 77	6, 16, 29, 32, 78	51, 52
2.6	A: 2, 12, 20, 29, 34, 42 B: 50, 62, 67, 72, 76, 78, 86, 102	1, 11, 30, 57, 70, 84, 101	105, 108
3.1	2, 8, 18, 22, 23, 29, 40	16, 25, 33, 38	41, 46
3.2	2, 12, 15, 22, 24, 31, 38, 41, 46, 61	10, 16, 40, 48, 54	59, 65
3.3	8, 23, 31, 44, 47, 55, 60, 63, 67, 69	43, 56, 64, 70	66
3.4	4, 7	2, 8	33
3.5	9, 12, 24, 34, 38, 43, 54, 58, 59	21, 31, 50, 57	40, 69
3.6	6, 13, 30, 38, 53, 70, 72, 84, 86, 93	34, 50, 68, 78, 82	105
3.7	5, 13, 20, 27, 40, 42, 46	10, 22, 41, 47	53, 59
3.8	10, 18, 28, 30, 38, 51, 62, 64, 80, 90, 96	9, 24, 32, 54, 63, 76, 93	106
3.9	16, 24, 28, 34, 42, 56	14, 22, 25, 39	63
3.10	2, 10, 11, 19, 22, 25, 31, 33, 36	14, 23, 27, 44	-
3.11	A: 2, 6(a,d), 11, 15, 16 (e), 22, 24, 36, 38 B: 40, 47, 53, 54, 57	16 (d), 23, 43, 51, 59	64, 70
4.1	3, 8, 13, 20, 25, 51, 78	4, 9, 17, 38, 50	88, 96
4.2	3, 14, 22, 30, 38, 40, 49, 64	8, 26, 41, 66	59, 71
4.3	4, 13, 28, 40, 54, 63, 69(a), 74	44, 59, 64, 76	56, 71
4.4	7, 11, 25, 37, 49, 68, 81, 98, 115, 122	46, 82, 96, 118	123
4.5	10, 20, 32, 38, 57, 61, 64, 71, 79, 85	33, 50, 74, 80	84, 89
4.6	3, 6, 7, 11, 13, 16, 27, 30, 33, 67	4, 12, 28, 35	43, 67
4.7	2, 11, 25, 28	13, 21	18, 27(b)
4.8	8, 14, 20, 41, 66, 81, 88, 93, 112, 119(a-i)	16, 70, 79, 104, 113	129, 132
5.1	2, 7, 9, 17	8, 18	23
5.2	8, 12, 20, 32, 33, 43	31, 46	-

*** CAS** problems require the use of a technology tool (e.g., graphing calculators or a computer). You are encouraged to do these problems in order to enhance your understanding of the concepts involved.

Tips on how to enhance your problem-solving abilities:

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