King Fahd University of Petroleum and Minerals
Department of Mathematics & Statistics

Math 101 – Syllabus

2012-2013 (122)
Coordinators: Dr. A. Boucherif
Dr. S. Al-Garni and Dr. A. Tatar

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--2.6)	**Place:** Building 54	25% (100 points)
	Date: Wed. February 27, 2013	**Time:** 8:30-10:30 PM	
2. **Exam II** A common multiple choice exam	**Material:** (3.1--3.10)	**Place:** Building 54	25% (100 points)
	Date: Sunday, April 7, 2013	**Time:** 9:00-11:00 PM	
3. **Final Exam** A comprehensive common multiple choice exam	**Material:** (Comprehensive)	**Place:** Building 54	35% (140 points)
	Date: Monday May 20th, 2013	**Time:** 8:00-11:00 AM	
4. **Class Work**	**i) Online Homework:** The web address for online homework is kfupm.mylabsplus.com		5% (20 points)
	ii) Class Activities: It is 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 should 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-missing exam and in the final exam.

Attendance:
Attendance is a University Requirement (see p. 38 of the Undergraduate Bulletin 2006-2009). A DN grade will be awarded to any student who accumulates 12 unexcused absences (lecture + recitation).

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

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Pacing Schedule

Week	Dates	Sec.	Topics
1	Jan. 26-30	2.1	Rates of Change and Tangents to Curves
		2.2	Limit of a Function and Limit Laws
2	Feb. 2-6	2.2	Continued
		2.3	The Precise Definition of a Limit **(Up to the end of Example 4)**
3	Feb. 9-13	2.4	One-Sided Limits
		2.5	Continuity
4	Feb. 16-20	2.6	Limits Involving infinity; Asymptotes of Graphs
5	Feb. 23-27	3.1	Tangents and the Derivative at a point
		3.2	The Derivative as a function
		Exam I	**Wednesday, February 27, 2013;Time:8:30-10:30 PM Building 54; Material: [2.1 – 2.6]**
6	March 2-6	3.3	Differentiation Rules
		3.4	The Derivative as a Rate of Change
7	March 9-13	3.5	Derivatives of Trigonometric Functions
		3.6	The Chain Rule
8	March 16-20	3.7	Implicit Differentiation
		3.8	Derivatives of Inverse Functions and Logarithms
Midterm Vacation: Thursday March 21st to Friday March 29th ,2013			
9	March 30-April 3	3.9	Inverse Trigonometric Functions
		3.10	Related Rules
10	April 6-10	3.11	Linearization and Differentials
		4.1	Extreme Values of Functions
		Exam II	**Sunday, April 7, 2013; Time: 9:00-11:00 PM Building 54; Material: [3.1 – 3.10]**
11	April 13-17	4.2	The Mean Value Theorem
		4.3	Monotonic Functions and the first Derivative Test
12	April 20-24	4.4	Concavity and Curve Sketching
		4.5	Indeterminate Forms and L' Hospital's Rule
13	April 27- May 1	4.5	Continued
		4.6	Applied Optimization
14	May 4-8	4.7	Newton's Method
		4.8	Antiderivatives
15	May 11-15	5.1	Area and Estimating With Finite Sum
		5.2	Sigma Notation and Limits of Finite Sums
Final Exam (Comprehensive): Monday May 20th, 2013; 8:00 – 11:00 AM; Building 54			

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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	4, 9, 18, 38, 50, 58, 66, 69, 84	6, 30, 64, 72	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, 60
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.