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

Math 101 – Syllabus

2013-2014 (133)
Coordinator: Dr. Ahmad Y. Al-Dweik

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 students to the basic concepts and methods of Calculus. Topics include: Limits, continuity, and differentiability of functions of one variable. Techniques of differentiation. Implicit Differentiation. Local extrema, first and second derivative for local extrema. Concavity and inflection points. Curve sketching. Applied extrema problems. The Mean Value Theorem and applications. Estimating area.

Grading Policy:

1. **Exam I** A written exam	**Material:** (2.1—3.1)	**Place:** Building 54	25% (100 points)
	Date: **Wednesday, June 25.**	**Time:**	
2. **Exam II** A common multiple choice exam	**Material:** (3.2--3.11)	**Place:** Building 54	25% (100 points)
	Date: **Monday, July 14.**	**Time:**	
3. **Final Exam** A comprehensive common multiple choice exam	**Material:** (Comprehensive)	**Place:** Building 54	35% (140 points)
	Date: **Wednesday, August 13.**	**Time:** **08:00-11:00AM**	
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 10 unexcused absences (lecture and recitation).

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

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Pacing Schedule

Week	Dates (2014)	Sec.	**Topics** (27 sections)
1	June 08-12	2.1	Rates of Change and Tangents to Curves
		2.2	Limit of a Function and Limit Laws
		2.3	The Precise Definition of a Limit **(Up to the end of Example 4)**
2	June 15-19	2.4	One-Sided Limits
		2.5	Continuity
		2.6	Limits Involving infinity; Asymptotes of Graphs
3	June 22-26	3.1	Tangents and the Derivative at a point
		3.2	The Derivative as a function
		3.3	Differentiation Rules
		3.4	The Derivative as a Rate of Change
Exam I: Material 2.1- 3.1; Wednesday, June 25, 2014.			
4	June 29-July 3	3.5	Derivatives of Trigonometric Functions
		3.6	The Chain Rule
		3.7	Implicit Differentiation
		3.8	Derivatives of Inverse Functions and Logarithms
5	July 6-10	3.9	Inverse Trigonometric Functions
		3.10	Related Rules
		3.11	Linearization and Differentials
		4.1	Extreme Values of Functions
6	July 13-17	4.2	The Mean Value Theorem
		4.3	Monotonic Functions and the first Derivative Test
		4.4	Concavity and Curve Sketching
		4.5	Indeterminate Forms and L' Hospital's Rule
Exam II: Material 3.2- 3.11; Monday, July 14, 2014.			
Ramadhan Break			
7	August 03-07	4.6	Applied Optimization
		4.7	Newton's Method
		4.8	Antiderivatives
8	August 10-12	5.1	Area and Estimating With Finite Sum
		5.2	Sigma Notation and Limits of Finite Sums
Final Exam (Comprehensive): Wednesday, August 13, 2014; 08:00-11:00AM.			

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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.