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

Math 101 – Syllabus

2011-2012 (112)
Coordinator: Dr. Ryad Ghanam

Title: Math 101: Calculus I
Credit: 4-0-4
Textbook: Calculus (Early Transcendentals), by J. Stewart, 6th edition, Brooks/Cole, 2008.

Objectives: To introduce the student to the basic concepts and methods of Calculus. Topics include: Limits and Continuity of functions of a single variable. Differentiability. Techniques of Differentiation. Implicit Differentiation. Local Extrema. Concavity and Inflection points. Applications: Related Rates, Local Linear Approximation, Differentials, Curve Sketching and Optimization problems.

Grading Policy

1. Exam I: 25% (100 points), a **common written exam**. It will be held on **Tuesday, February 28, 2012 at 6:00 p.m.**
2. Exam II: 25% (100 points), a **common multiple choice exam**. The date of the exam will be announced later.
3. Class Work: 15% (60 points). It is based on quizzes, homework, and\or other class activities determined by the instructor. Any quiz or test under class activity should be of a written type and not of a multiple choice type.
4. Final Exam: 35% (140 points), a **comprehensive common multiple choice exam.** It will be held on **Sunday, May 20, 2012 at 7:30 a.m.**

Class Work Average: The section average (X) of the Class Work out of 60 should satisfy

$$X \in [36,45].$$

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

Missing an Exam: No makeup exam will be given in any case. 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 his average performance and the overall average. Further, the student must provide an official excuse within one week of the missed exam.

Attendance: 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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Week	Date	Sec.	Topics (28 sections)
1	**Jan. 28- Feb. 1**	**2.1**	The Tangent Problem (**Example 1).**
		2.2	The Limit of a Function
2	**Feb. 4- Feb. 8**	**2.3**	Calculating Limits Using the Limit Laws
		2.4	The Precise Definition of a Limit (**Examples 1,2, 3)**
3	**Feb. 11- Feb. 15**	**2.5**	Continuity
		2.6	Limits at Infinity; Horizontal Asymptotes
4	**Feb. 18-Feb. 22**	**2.7**	Derivatives and Rates of Change
		2.8	The Derivative as a Function + Exercise # 54
5	**Feb. 25- Feb. 29**	**2.8**	Continued
		3.1	Derivatives of Polynomials and Exponential Functions
Exam I: Tuesday, February 28, 2012 at 6 p.m.; Material: 2.1-2.7			
6	**March 3 – March 7**	**3.2**	The Product and Quotient Rules
		3.3	Derivatives of Trigonometric Functions
7	**March 10 – March 14**	**3.4**	The Chain rule
		3.5	Implicit Differentiation
8	**March 17-March 21**	**3.6**	Derivatives of Logarithmic Functions
		3.7	Rates of Change **(Example 1)**
Midterm Vacation (Spring break): March 24-March 28, 2012- Your time to catch up on your studies, movie list, travel or just sleep!			
9	**March 31- April 4**	**3.9**	Related Rates
		3.10	Linear Approximations and Differentials
10	**April 7-April 11**	**3.10**	Continued
		3.11	Hyperbolic Functions
Exam II: To be announced later; Material: 2.8-3.7 & 3.9			
11	**April 14-April 18**	**4.1**	Maximum and Minimum Values
		4.2	The Mean Value Theorem
12	**April 21-April 25**	**4.3**	How Derivatives Affect the Shape of a Graph
		4.4	Indeterminate Forms and L'Hospital's Rule
13	**April 28 - May 2**	**4.4**	Continued
		4.5	Summary of Curve Sketching
14	**May 5 – May 9**	**4.7**	Optimization Problems
		4.8	Newton's Method
15	**May 12- May 16**	**4.9**	Antiderivatives
			Review/Catching up
Final Exam (Comprehensive): Sunday, May 20, 2012 at 7:30 a.m.			

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Homework and Recitation Problems

Section	Homework	Recitation	CAS *
2.2	1, 6, 9, 14, 18, 27, 31	4, 13, 28, 32	-
2.3	1, 8, 18, 19, 23, 26, 36, 38, 42, 48, 49, 58	10, 14, 29, 37, 45,51	-
2.4	1, 3, 17, 21	4, 18, 20	-
2.5	3, 10, 17, 19, 24, 27, 33, 39, 41, 47, 50	15, 28, 43, 49	30
2.6	4, 9, 18, 24, 26, 33, 36, 42, 47, 50	3, 7, 23, 41, 49	-
2.7	3, 10(a, b), 15, 19, 23(a), 29, 34, 38	11, 12, 17, 20, 31	-
2.8	4, 25, 36, 41, 45, 49, 52, 54	3, 12, 43, 48, 53	30
3.1	10, 24, 32, 35, 46, 51, 58, 60, 62(b), 70, 73	23, 30, 50,(a, b), 68,75	48
3.2	10, 24, 28, 34, 44(b, c), 48(b), 55, 58	20, 30, 47, 50(c)	40
3.3	4, 16, 18, 22, 30, 34, 41, 48, 51	19, 31, 42, 45	-
3.4	19, 36, 39, 46, 50, 53, 61, 71, 75	65, 74, 76	-
3.5	10, 19, 26, 35, 46, 53, 67(a, b)	34, 47, 65, 68	-
3.6	4, 11, 16, 22, 25, 30, 33, 38, 46, 50, 52	16, 32, 42, 53	-
3.7	1, 7	4, 5	-
3.9	4, 10, 12, 13, 15, 29, 35	5, 9, 41	-
3.10	4, 9, 11(b), 16, 20, 25, 34	2, 10, 24, 35	5
3.11	3(a), 4(b), 10, 13, 19, 20, 23(a, e), 30, 40, 42	1(b), 6(b), 17, 21, 37,45	-
4.1	4, 8, 10, 22, 33, 39, 42, 50, 58, 68(b)	14, 28, 44, 74	-
4.2	4, 6, 12, 14, 18, 24	2, 5, 16, 20, 30	-
4.3	2, 6, 8, 14, 16, 20, 25, 37, 46, 49	35, 40, 47, 50	56
4.4	2, 4, 12, 22, 28, 31, 35, 45, 47, 60, 64	13, 30, 44, 52, 53	-
4.5	6, 10, 26, 34, 37, 50, 58, 65	18, 36, 67, 70	-
4.7	6, 11, 14, 19, 25, 27, 33, 35, 39, 50	12, 24, 46, 52	-
4.8	2, 6, 8, 12	1, 7, 11	-
4.9	12, 16, 32, 33, 42, 44, 50, 61	5, 17, 36, 49, 62	-

* CAS problems require the use of a technology tool (e.g., graphing calculators or computers). 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. Do all homework assignments on time.
2. Practice (but don't memorize) more problems than the above lists.
3. 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. Try the recitation problems before coming to class.
6. 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.