Math 101 – Syllabus (Revised)

2010-2011 (101)
Coordinator: Dr. A. Shawky Ibrahim

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

Objectives: To introduce the student to basic concepts and methods of Calculus. Topics include: Limits and continuity of functions of a single variable. Differentiability. Exponential, Logarithmic, Hyperbolic, trigonometric and inverse trigonometric functions. Applications: Related rates, Local linear approximation, Differentials, Curve sketching and Applied optimization problems.

Grading Policy

1. Exam I: 25% (100 points) (Tuesday Nov.02, 2010). A **common written exam**. Material: Chapter 2. Place Bldg 54 Time 8:00 – 10:00 p.m.

2. Exam II: 25 % (100 points) (Tuesday Dec. 7, 2010). A **common multiple choice exam**. Material: 3.1 – 3.9. Place Bldg 54 Time 5:30 – 7:30 p.m.

3. Class Work: 15% (60 points). It is based on quizzes (around 5 quizzes), homework, 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 types.

4. Final Exam: 35% (140 points), a **comprehensive common multiple choice exam.** (Sunday January 23, 2011 at 7:30 AM).

Class Work Average. The average (x out of 60) of the Class Work of the sections taught by the same instructor should be in the interval [36, 45].

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

Missing one of the Two Common Major Exams I or 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 and recitation).

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

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Week	Date	Sec.	Topics
1	Sept 25-29	2.1	The Tangent Problem: **Example 1**.
		2.2	The Limit of a Function
2	Oct 2-6	2.3	Calculating Limits Using the Limit Laws
		2.4	The Precise Definition of a Limit: Examples 1, and 2 (see Homework and Recitation Problems)
3	Oct 9-13	2.5	Continuity
		2.6	Limits at Infinity; Horizontal Asymptotes (up to the end of p. 137)
4	Oct 16-20	2.7	Derivative and Rates of Change
		2.8	The Derivative as a Function
5	Oct 23-27	2.8	Continued
		3.1	Derivatives of Polynomials and Exponential Functions
Major Exam I, Tuesday, November 2, 2010, Material: Chapter 2 (Written)			
6	Oct 30-Nov 3	3.2	The Product and Quotient Rules
		3.3	Derivatives of Trigonometric Functions
7	Nov 6-10	3.4	The Chain Rule
		3.5	Implicit Differentiation
ID-Al-ADHA Break: Thursday, Nov. 11 to the End of Sunday, Nov. 21, 2010			
8	Nov 22-24	3.6	Derivatives of Logarithmic Functions
9	Nov 27-Dec 1	3.7	Rates of Change (Example 1 only)
		3.9	Related Rates
Major Exam II Tuesday, December 7, 2010, Material: [3.1 to 3.9] (MCQ)			
10	Dec 4-8	3.10	Linear Approximations and Differentials
		3.11	Hyperbolic Function
11	Dec 11-15	4.1	Maximum and Minimum Values
		4.2	The Mean Value Theorem
12	Dec 18-22	4.3	How Derivatives Affect the Shape of a Graph
		4.4	Indeterminate Forms and L'Hospital's Rule
13	Dec 25-29	4.4	Continued
		4.5	Summary of Curve Sketching
14	Jan 1-5	4.7	Optimization Problems
		4.8	Newton's Method
15	Jan 8-12	4.9	Antiderivatives
			+ Catching up
16	Jan 15-16		Review
Final Exam :Sunday January 23, 2011 (7:30 AM) A Comprehensive (MCQ),			

Math 101 (101)
Suggested Homework and Recitation Problems

Section	Homework	Recitation	CAS*
2.1			3, 5
2.2	2, 6, 9, 14, 29, 30	4, 16, 28, 32	-
2.3	2, 4, 9, 20, 23, 26, 37, 44, 48, 49, 55	10, 15, 29, 38, 51, 56	-
2.4	3, 4, 18, 20	1, 2, 16, 21	-
2.5	4, 10, 14, 16, 20, 26, 34, 39, 42, 43(a,c), 48	3, 12, 19, 27, 43(b), 50	30
2.6	4, 9, 18, 24, 26, 33, 36, 42, 47, 50	3, 7, 23, 441, 49	-
2.7	3, 19(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©	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 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.