

**King Fahd University of Petroleum and Minerals**  
**Department of Mathematics & Statistics**  
**Math 101 – Syllabus**  
**2009-2010 (092)**  
**Coordinator: Dr. Ibrahim Al-Rasasi**

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**Title:** Calculus I  
**Credit:** 4-0-4  
**Textbook:** Calculus (Early Transcendentals), by J. Stewart, 6<sup>th</sup> 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), Date: Saturday, March 27, 2010. A common written exam. Material: 2.1- 2.7.
2. Exam II: 25% (100 points), Date: Saturday, May 1, 2010. A common multiple choice exam. Material: 2.8- 3.9.
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, June 13, 2010 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 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:** 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.

# Math 101 Syllabus

2009-2010 (092)

Calculus (Early Transcendentals), by J. Stewart, 6<sup>th</sup> edition, Brooks/Cole, 2008.

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Week	Date	Sec.	Topics
1	Feb. 20- 24, 2010	2.1 2.2	The Tangent Problem: <b>Example 1.</b> The Limit of a Function
2	Feb. 27- March 3	2.3 2.4	Calculating Limits Using the Limit Laws The Precise Definition of a Limit: Examples 1, and 2
3	March 6- 10	2.5 2.6	Continuity Limits at Infinity; Horizontal Asymptotes
4	March 13- 17	2.7 2.8	Derivative and Rates of Change The Derivative as a Function
5	March 20- 24	2.8 3.1	Continued Derivatives of Polynomials and Exponential Functions
<b>Exam I: Saturday, March 27, 2010; Material: 2.1- 2.7</b>			
6	March 27- 31	3.2 3.3	The Product and Quotient Rules Derivatives of Trigonometric Functions
7	April 3- 7	3.4 3.5	The Chain Rule Implicit Differentiation
8	April 10- 14	3.6 3.7	Derivatives of Logarithmic Functions Rates of Change (Example 1 only)
<b>☺ Midterm Break: April 17- 21, 2010 ↻ →</b>			
9	April 24- 28	3.9 3.10	Related Rates Linear Approximations and Differentials
<b>Exam II: Saturday, May 1, 2010; Material: 2.8- 3.7 &amp; 3.9</b>			
10	May 1- 5	3.10 3.11	Continued Hyperbolic Functions
11	May 8- 12	4.1 4.2	Maximum and Minimum Values The Mean Value Theorem
12	May 15- 19	4.3 4.4	How Derivatives Affect the Shape of a Graph Indeterminate Forms and L'Hospital's Rule
13	May 22- 26	4.4 4.5	Continued Summary of Curve Sketching
14	May 29- June 2	4.7 4.8	Optimization Problems Newton's Method
15	June 5- 9	4.9	Antiderivatives Review/Catching up
<b>Final Exam :Sunday, June 13, 2010(7:30 AM) A Comprehensive Multiple Choice Exam</b>			

## Math 101 (091)

### Homework and Recitation Problems

Section	Homework	Recitation	CAS*
2.2	2, 6, 9, 12,14, 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, 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 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.