

**King Fahd University of Petroleum and Minerals**  
**Department of Mathematics & Statistics**  
**Math 101 – Syllabus**  
**2011-2012 (111)**  
**Coordinator: Dr. Ahmad Y. Al-Dweik**

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**Title:** Math 101: 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 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, October 11, 2011 at 6 p.m.;**
2. Exam II: 25% (100 points), a **common multiple choice exam**. It will be held on **Tuesday, November 22, 2011 at 6 p.m.;**
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 **Thursday, January 5, 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:** The questions of the common exams are based on the examples, homework problems, recitation problems and the exercises of the textbook.

**Missing an Exam:** 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 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.

# MATH 101 Syllabus

2011-2012 (111)

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Week	Date	Sec.	Topics (26 sections)
1	Sep 10-14, 2011	2.1 2.2	The Tangent Problem (Example 1). The Limit of a Function
2	Sep 17-21	2.3 2.4	Calculating Limits Using the Limit Laws The Precise Definition of a Limit ( <b>Examples 1,2 and 3</b> )
<b>National Day-Holiday: Saturday, Sep. 24, 2011</b>			
3	Sep 25-28	2.5 2.6	Continuity Limits at Infinity; Horizontal Asymptotes
4	Oct 1-5	2.7 2.8	Derivative and Rates of Change The Derivative as a Function + Exercise # 54
5	Oct 8-12	2.8 3.1	Continued Derivatives of Polynomials and Exponential Functions
<b>Major Exam I: Tuesday, October 11, 2011 at 6 p.m.; Material: 2.1-2.7</b>			
6	Oct 15-19	3.2 3.3	The Product and Quotient Rules Derivatives of Trigonometric Functions
7	Oct 22-26	3.4 3.5	The Chain Rule Implicit Differentiation
8	Oct 29 -31	3.6	Derivatives of Logarithmic Functions
<b>Eid Al-Adha Break: Tuesday Nov. 1, 2011 to Friday Nov. 11, 2011</b>			
9	Nov 12-16	3.7 3.9	Rates of Change ( <b>Example 1</b> ) Related Rates
10	Nov 19-23	3.10 3.11	Linear Approximations and Differentials Hyperbolic Function
<b>Major Exam II: Tuesday, November 22, 2011 at 6 p.m.; Material: 2.8-3.9</b>			
11	Nov 26-30	4.1 4.2	Maximum and Minimum Values The Mean Value Theorem
12	Dec 3-7	4.2 4.3	Continued How Derivatives Affect the Shape of a Graph
13	Dec 10-14	4.4 4.5	Indeterminate Forms and L'Hospital's Rule Summary of Curve Sketching
14	Dec 17-21	4.5 4.7	Continued Optimization Problems
15	Dec 24-28	4.8 4.9	Newton's Method Antiderivatives
16	Dec 31-Jan 2, 2012		Review/Catching up
<b>Final Exam ( Comprehensive ): Thursday, January 5, 2012 at 7:30 a.m.</b>			

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Section	Homework	Recitation	CAS*
2.2	2, 6, 9, 12,15, 28, 31	4, 16, 29, 30	-
2.3	2, 4, 9, 20, 23, 26, 37, 44, 48, 51, 58	10, 15, 29, 38, 49, 55	-
2.4	2, 3, 16, 21	1,4, 18, 20	-
2.5	4, 10, 14, 16, 19, 26, 34, 39, 42, 43(a,c), 50	3, 12, 20, 27, 43(b), 48	30
2.6	4, 9, 18, 23, 26, 33, 36, 42, 47, 49	3, 7, 24, 41, 50	-
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, 48, 52, 54	3, 12, 43, 49, 53	30
3.1	10, 24, 30, 35, 46, 51, 58, 60, 62(b), 70, 73	23, 32, 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, 32, 38, 46, 50, 53	16, 33, 42, 52	-
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, 24, 34	2, 10, 25, 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, 44, 47, 60, 64	13, 30, 45, 52, 53	-
4.5	6, 10, 26, 34, 37, 50, 58, 65	18, 36, 67, 70	-
4.7	6, 11, 14, 19, 24, 27, 33, 35, 39, 50	12, 25, 46, 52	-
4.8	2, 6, 8, 12	1, 7, 11	-
4.9	5, 16, 32, 33, 42, 44, 49, 61	12, 17, 36, 50, 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. 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.