

**King Fahd University of Petroleum and Minerals**  
**Department of Mathematics & Statistics**  
**Math 132 – Syllabus**  
**2009-2010 (092)**  
**Coordinator: Dr. Abdul Rahim Khan**

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**Instructor:** Dr. Abdul Rahim Khan  
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**Office Phone:** 3- 860 -2237  
**Title:** Applied Calculus  
**Credit:** 3-0-3

**Textbook:** *Introductory Mathematical Analysis (for Business, Economics, and the Life and Social Sciences)*, by Ernest F. Haeussler, Jr. Richard S. Paul and Richard J. Wood, 12<sup>th</sup> edition, Pearson, 2008.

**Objectives:** To provide a mathematical foundation for students in business, economics, and the life and social sciences. Topics include: Limits and continuity of functions of a single variable. The derivative. Rules for differentiation. Derivative of Logarithmic, exponential, and trigonometric functions. Differentials. Growth and decay models. Definite and indefinite integrals. Techniques of integration. Integrals involving logarithmic, exponential and trigonometric functions. Area under a curve and between curves. Functions of several variables. Partial derivatives and their applications to optimization.

**Grading Policy**

1. Exam I: 25% (100 points) --- (**A written Exam**). It will be on **Saturday - March 27, 2010**.
2. Exam II: 25% (100 points), a **common multiple choice exam**. It will be on **Saturday - May 1, 2010**.
3. Class Work: 15% (60 points). It is based on quizzes or 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 type.
4. Final Exam: 35% (140 points), a **comprehensive common multiple choice exam**. (**Date and place TBA**).

**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 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:** A DN grade will be awarded to any student who accumulates 9 unexcused absences..

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

## Math 132 Syllabus

2009-2010 (092)

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Week	Date	Section	Material	Homework
1	Feb20 – 24	10.1 10.2 10.3	Limits Limits (cont'd) Continuity	17, 19, 32, 40, 44 2, 15, 30, 40, 45, 50, 52, 57 5, 11, 22, 30, 38
2	Feb27 – Mar3	11.1 11.2 11.3	The derivative Rules for differentiation The derivative as a rate of change	12, 15, 16, 20, 25, 27 21, 33, 60, 72, 76, 85 8, 10, 12, 16, 22, 27, 40, 41
3	Mar 6 – 10	11.4 11.5	Product &quot;quot; rule The chain rule & the power rule	8,60 ,50 ,42 ,30 ,14 ,65 -----
4	Mar 13 – 17	12.1 12.2	Derivative of logarithmic functions Derivative of exponential functions	50,32 ,30 ,28 ,24 ,20 ,18 ,16 10, 14, 16, 22, 28, 30, 38,39
5	Mar 20 – 24	12.4 12.5 12.7	Implicit differentiation Logarithmic differentiation Higher order derivative	10, 12, 20, 22, 30, 34 8, 10, 14, 18, 20, 26 2, 8, 14, 30, 33, 35
<b>Exam I: 27-3-2010, Material: Ch. 10, 11 &amp; 12 (25%)</b>				
6	Mar 27 – 31	13.1 13.2 13.3	Relative extrema Absolute extrema on a closed interval Concavity	16, 18, 30, 38, 48, 52 2, 10, 12 12, 28, 40, 42, 60, 68
7	Apr 3-7	13.4 13.5 13.6	The second derivative test Asymptotes Applied maxima and minima	5, 6, 8, 10, 12 14, 20, 22, 33, 35, 45 2, 14, 18, 22, 26
8	Apr 10-14	14.1 14.2	Differentials The indefinite integral	12, 14, 18, 22, 28 9, 10, 18, 22, 30, 45
<b>Midterm Vacation---Apr.17-21</b>				
9	Apr 24-28	14.3 14.4 14.5	Integration with initial conditions More integration formulas Techniques of integration	5, 7, 11, 13, 14 9, 12, 15, 33, 35, 52 6, 12, 20, 30, 40, 44, 55
<b>Exam II: 1-5-2010 Material: Ch. 13 &amp; 14.1-14.5 (25%)</b>				
10	May 1-5	14.7 14.9 14.10	The fundamental theorem of Int. calculus Area Area between curves	48 ,44 ,42 ,36 ,16 28 ,24 ,20 ,15 ,12 ,9 1, 3, 5, 20, 30, 32
11	May 8-12	15.1 15.3	Integration by parts Integration by tables	6, 8, 12, 18, 20, 24, 32
12	May 15-19	Handout	Derivative and integrals of trigonometric Functions	
13	May 22-26	17.1	Functions of several variables	2, 3, 5, 12, 15, 20, 24, 28
14	May29-June 2	17.2 17.5	Partial derivatives Higher order partial derivatives	4, 6, 18, 20, 28, 30, 34 5, 9, 13, 18, 20, 21
15	June 5-9	17.7	Maxima and minima for functions of two variables	4,8,15,19,22,26,29
<b>Final Exam: Date and Time TBA, Material: Comprehensive (35%)</b>				

\* 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.