

King Fahd University of Petroleum and Minerals
Department of Mathematics & Statistics
Math 132 – Syllabus
2009-2010 (091)

Coordinator: Dr. Jaafar AlMutawa

Instructor: Dr. Uwe SCHAUZ
Office: Building 7, # 105
Email: schauz@kfupm.edu.sa
Office Phone: 3- 860 -7728
Title: Applied Calculus
Credit: 4-0-4

Textbook: *Introductory Mathematical Analysis (for Business, Economics, and the Life and Social Sciences)*, by Ernest F. Haeussler, Jr. Richard S. Paul and Richard Wood, 11th 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 **common multiple choice exam**. It will be on Monday, **November 02, 2009**.
2. Exam II: 25% (100 points), a **common multiple choice exam**. It will be on Monday, **December 21, 2009**.
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**. It will take place on Saturday, **January 30, 2010 (time:7:00 PM to 10:00 PM 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, 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: 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	Section	Material	Homework
1	Oct 3 – Oct 7	10.1	Limits	17, 19, 32, 40, 44
		10.2	Limits (cont'd)	2, 15, 30, 40, 45, 50, 52, 57
		10.4	Continuity	5, 11, 22, 30, 38
2	Oct 10 – 14	11.1	The derivative	12, 15, 16, 20, 25, 27
		11.2	Rules for differentiation	21, 33, 60, 72, 76, 85
		11.3	The derivative as a rate of change	8, 10, 12, 16, 22, 27, 40, 41
3	Oct 17 – 21	11.4	Differentiability & continuity	--
		11.5	Product & continuity	65, 60, 50, 42, 30, 14, 8
4	Oct 24 – 28	11.6	The chain rule & the power rule	72, 69, 60, 44, 40, 18, 8, 6
		12.1	Derivative of logarithmic functions	50, 32, 30, 28, 24, 20, 18, 16
		12.2	Derivative of exponential functions	10, 14, 16, 22, 28, 30, 38, 39
5	Oct 31	12.4	Implicit differentiation	10, 12, 20, 22, 30, 34
	Nov 2 – 4	12.5	Logarithmic differentiation	8, 10, 14, 18, 20, 26
		12.7	Higher order derivative	2, 8, 14, 30, 33, 35
Exam I: 02/11/2009, Material: Ch. 10, 11 & 12 (25%)				
6	Nov 7 – 11	13.1	Relative extrema	16, 18, 30, 38, 48, 52
		13.2	Absolute extrema on a closed interval	2, 10, 12
		13.3	Concavity	12, 28, 40, 42, 60, 68
7	Nov 14 – 18	13.4	The second derivative test	5, 6, 8, 10, 12
		13.5	Asymptotes	14, 20, 22, 33, 35, 45
		13.6	Applied maxima and minima	2, 14, 18, 22, 26
Eid Al-Adha Break: Thursday Nov 19, 2009 to Friday, Dec. 4, 2009				
8	Dec 5 – 9	14.1	Differentials	12, 14, 18, 22, 28
		14.2	The indefinite integral	9, 10, 18, 22, 30, 45
9	Dec 12 – 16	14.3	Integration with initial conditions	5, 7, 11, 13, 14
		14.4	More integration formulas	9, 12, 15, 33, 35, 52
		14.5	Techniques of integration	6, 12, 20, 30, 40, 44, 55
10	Dec 19 – 23	14.8	The fundamental theorem of Int. calculus	48, 44, 42, 36, 16
		14.10	Area	28, 24, 20, 15, 12, 9
		14.11	Area between curves	1, 3, 5, 20, 30, 32
Exam II: 21/12/2009, Material: Ch. 13 & 14 (25%)				
11	Dec 26 – 30	15.1	Integration by parts	6, 8, 12, 18, 20, 24, 32
		15.3	Integration by tables	
12	Jan 2 – 6	Handout	Derivative and integrals of trigonometric Functions	
13	Jan 9 – 13	17.1	Functions of several variables	2, 3, 5, 12, 15, 20, 24, 28
14	Jan 16 – 20	17.2	Partial derivatives	4, 6, 18, 20, 28, 30, 34
		17.5	Higher order partial derivatives	5, 9, 13, 18, 20, 21
15	Jan 23 – 27	17.7	Maxima and minima for functions of two variables	4, 8, 15, 19, 22, 26, 29
Final Exam: 30 January 2010, Material: Comprehensive (35%)				

* 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.