King Fahd University of Petroleum and Minerals
Department of Mathematics & Statistics

Math 132 – Syllabus

2012-2013 (122)

Instructor: Mohammad Z. Abu-Sbeih

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Office Hours: SMW : 11 am to 11 :50 am.
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, 12th 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**) **Date TBA.**
2. Exam II: 25% (100 points) --- (A **multiple choice exam**) **Date TBA.**
3. Class Work: 15% (60 points). It is based on quizzes. There will be a quiz every week. No makeup quiz will be given under any circumstance. When a student misses a quiz, his grade for this quiz will be zero unless an official excuse from student affairs is presented on time. The questions of the quizzes are exercises from the textbook.
4. Final Exam: 35% (140 points), a **comprehensive 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 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: DN grade will be awarded to any student who accumulates 9 unexcused absences.

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

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Week	Date	Section	Material	Homework
1	Jan 26 - Jan 30	10.1 10.2 10.3	Limits Limits (cont'd) Continuity	18, 22, 32, 40, 43 2, 15, 30, 39, 45, 50, 52, 58 6, 11, 22, 30, 36
2	Feb 2 - 6	11.1 11.2 11.3	The derivative Rules for differentiation The derivative as a rate of change	12, 15, 18, 20, 25, 27 22, 33, 60, 72, 78, 85 8, 10, 12, 16, 21, 27, 40, 41
3	Feb 9 - 13	11.4 11.5	Product &quotient rule The chain rule & the power rule	9,15 , 28,37,57,66 -----
4	Feb 16 - 20	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	Feb 23 - 27	12.4 12.5 12.7	Implicit differentiation Logarithmic differentiation Higher order derivative	10, 14, 20, 22, 30, 34 7, 10, 14, 18, 20, 27 2, 8, 14, 30, 33, 35
Exam I, Saturday March 2, from 6:30 pm to 8:00 pm, Material: Ch. 10, 11 & 12 (25%)				
6	March 2 - 6	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	March 9 - 13	13.4 13.5 13.6	The second derivative test Asymptotes Applied maxima and minima	5, 6, 8, 10, 12 14, 20, 22, 34, 35, 45 4, 15, 18, 22, 26
8	March 16- 20	14.1 14.2	Differentials The indefinite integral	12, 14, 20, 22, 29 8, 10, 18, 27, 30, 45
	March 23 – 27	Vacation		
9	March 30 – April 3	14.3 14.4 14.5	Integration with initial conditions More integration formulas Techniques of integration	5, 7, 11, 14,15 9, 12, 15, 33, 35, 52 6, 12, 23, 30, 40, 44, 53,63
10	April 6- 10	14.7 14.9 14.10	Fundamental theorem of calculus Area Area between curves	16,36 ,42 ,44,48 9 ,12 ,15 ,20 ,24 ,28 1, 3, 5, 20, 30, 32
Exam II, Saturday April 13, from 6:30 pm to 8:00 pm, Material: Ch. 13 & 14 (25%)				
11	April 13- 17	15.1 15.3	Integration by parts Integration by tables	6, 8, 12, 18, 20, 24, 32
12	April 20- 24	Handout	Derivative and integrals of trigonometric Functions	
13	April 27- May 1	17.1	Functions of several variables	5, 9, 12, 15, 20, 24, 27
14	May 4- 8	17.2 17.5	Partial derivatives Higher order partial derivatives	8, 18, 20, 28, 30, 35 6, 9, 13, 18, 20, 23

15	May 11-15	17.7	Maxima and minima	4, 9, 17, 19, 22, 26, 35
16	May18-22		Finals	
Final Exam: Sunday, May 22, at 8 AM. 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.