King Fahd University of Petroleum and Minerals
Department of Mathematics & Statistics
Math 132 – Syllabus
2015-2016 (152)

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Building 4 - 237

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Office Phone: 13- 860 -2296
Office Hours: UTR: 11 am to 11 :50 am.
Title: **Math 132: 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, 13th edition, Pearson, 20011.*

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.

Learning Outcomes

- Derivative of a function using the appropriate technique from the following: power rule, product rule, quotient rule, chain rule.
- Derivative of exponential functions, trigonometric functions and logarithmic functions.
- Relative minima and/or maxima, absolute minimum and/or maximum and the inflection point using differentiation.
- Solution of problems about optimization and exponential growth and decay using the concept of differentiation of function of one variable.
- Integrals of some algebraic and trigonometric functions and understand the relationship between the derivative and the definite integral of a function.
- Use of the Fundamental Theorem of Calculus to evaluate definite integral of a function.
- Calculation of area between two curves
- Classifying extreme values of a function of two variables and apply them to optimization problems.
- Various applications in business and economics.

Grading Policy

1. **Exam I: 25%** (100 points) - **Wednesday, February 24, 2016**
2. **Exam II: 25%** (100 points) - **Wednesday April 6, 2016**
3. **Class Work: 20%** (80 points). It is based on 4 quizzes -60 point + homework 20 points. 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: 30%** (120 points), a **comprehensive multiple choice exam.** (**Date: Saturday May 21, 2016 at 7:00 PM)**.

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 other major and in the final exam.

Attendance: DN grade will be awarded to any student who accumulates 6 unexcused absences. **NO MARKS ARE ASSIGNED FOR ATTENDANCE**

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

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.

Math 132 Syllabus

2015-2016 (152)

Week	Date	Section	Material	Homework
1	Jan. 17 - 21	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	Jan. 24 - 28	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	Jan. 31- Feb. 4	11.4 11.5	Product &quotient rule The chain rule & the power rule	9,15 , 28,37,57,66 -----
4	Feb. 7 – 11	12.1 12.2	Derivative of logarithmic functions Derivative of exponential functions	,30 ,28 ,24 ,20 ,18 ,16 50,32 10, 14, 16, 22, 28, 30, 38,39
5	Feb. 14 – 18	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
6	Feb. 21- 25		Catch up / Revision	
		Exam I, Date: Wed., Feb. 24, 2016; Time: 5:45- 7:45 pm; Place: TBA; Material: Ch. 10, 11 & 12 (25%)		
7	Feb. 28- March 3	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
8	March 6 - 10	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
March 13-17, 2016 Midterm Vacation				
9	March 20 – 24	14.1 14.2	Differentials The indefinite integral	12, 14, 20, 22, 29 8, 10, 18, 27, 30, 45
10	March 27- 31	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
11	April 3 – 7	14.7 14.9	Fundamental theorem of calculus Area between curves	16,36 ,42 ,44,48 1, 3, 5, 20, 33, 37,46,58
		Exam II, Wednesday April 6, 2016, Material: Ch. 13 & 14 (25%)		
12	April 10 – 14	15.1 15.3	Integration by parts Integration by tables	6, 8, 12, 18, 20, 24, 32
13	April 17 – 21	Handout	Derivative and integrals of trigonometric Functions	
14	April 24- 28	17.1 17.4	Partial derivatives Higher order partial derivatives	2,8, 18, 20, 24, 30, 35 6, 8, 12, 18, 20,21, 23
15	May 1 – 5	17.6	Maxima and minima	4, 9, 17, 19, 22, 26, 29
Final Exam: 30% (120 points), a **comprehensive multiple choice exam.** (**Date: Saturday May 21, 2016 at 7:00 PM)**.				