United Arab Emirates University
College Requirement Unit, Engineering
Math 115: Calculus for Business and Economics

Spring 2010- Overall Sections

I- Course Description:

A- General Information	
Subject	**Calculus for Business and Economics MATH115**
Textbook	**Calculus for Business, Economics, Life Sciences, and Social Sciences, Eleventh Edition** by Raymond A. Barnett; Michael R. Ziegler; Karl E. Byleen, 11th Ed.
Prerequisite	Basic Mathematics 2 (MATU 1312)
Instructor	**Dr. Fathalla A. Rihan (frihan@uaeu.ac.ae)**
B- Professional Information	
Course Description	This course develops students' mathematical skills needed in statistics, business and economic applications. It includes basic concepts, linear and nonlinear equations, inequalities, differential and integral calculus, matrices, mathematics of finance and business and economic applications. The purpose of this class is to introduce calculus and its basic principles as it applies to business, revisit exponential and logarithmic functions, promote critical thinking, and enhance technological abilities.

Intended Learning outcomes (ILO's):	Upon successful completion of this course, the student should l be able to:
	
	1. **Solve Problems**
	   a) Analyze a problem and identify relevant data
	   b) Construct an algebraic expression to fit the data
	   c) Do the mathematical computations necessary to reach a conclusion
	   d) Reach and state a logical conclusion based on the original facts
	
	2. **Demonstrate Skills and Knowledge of**
	   a) Mathematical notation
	   b) Differentiation
	   c) Integration
	   d) Exponential functions
	   e) Logarithmic functions
	
	3. **Communicate by way of**
	   a) Graphical representation
	   b) Mathematical language and notation
	   c) Written answers to problems

Covered Topics	**Functions and their graphs (Ch. 2)** **Derivative (Ch. 3 & Ch. 4)** **Application of derivative (Ch. 5)** **Integration (Ch. 6)** **Matrices**
Assessment	**Students Worksheets & Participations % 10** **Best of Two Quizzes % 10** **Two Tests % 20** **Midterm Exam % 20 (7:00-8:00 pm, 12th April, 2010)** **Final Exam % 40 (3:30-5:30 pm, 5th June, 2010)** There are no make-up exams or quizzes given. Come to class!
Attendance:	**Attendance is required for all classes. Students who are absent for any reason more than 15% of required classes are prohibited from participating in subsequent exams and received a grade of "F" for the course.**
Cell Phone	Cell phone usage during class is absolutely not allowed. This includes calling, texting, browsing, etc. If a cell phone is out during class, it must be face down on the student's desk. Phones must be in silent mode. If the instructor sees a cell phone out and the phone is NOT face down on the student's desk, the student will be asked to leave the class. If a cell phone is out during a test or quiz and is not face down on the student's desk, the student will receive a grade of zero on the test or quiz.
Grading system	

Percentage	Letter Grade	Points
90%-100%	A	4
85%-89%	B+	3.3
80%-84%	B	3
75%-79%	C+	2.3
70%-74%	C	2
65%-69%	D+	1.3
60%-64%	D	1
Less than 60%	F	0

COURSE SCHEDULE AND CONTENTS:

Week#	Topics	Textbook Sections	Solved Examples	Exercises (H.W)
	Ch2. Functions and Their Graphs			
1--3	1-Introduction to the Concept of Function	**2.1**		1, 9, 11, 14, 18, 117
		2.2		3, 8, 9, 17, 61
	2- Graph of Linear and Quadratic Functions	**2.3**		1, 9, 10, 23, 45
	3- Exponential and Logarithmic Functions	**2.4**		1 (A, B, C, D), 5, 15, 43, 44, 48, 61
		2.5		1, 2, 7, 8, 29, 53, 65, 89, 93
	Ch3. & Ch 4 The Derivative			
4--6	**1- Limits and Continuity**	**3.1**		1,2, 19, 23, 26, 41, 66
		3.2		7(A, B, C, D), 8, 10, 49, 77
		3.3		1, 2, 3, 11 (A, B, C), 16, 51
	2- The Derivative and the Slope of a Graph	**3.4**		1 (A, B, C), 3, 5, 6, 39, 43
	3- Some Rules of Differentiation	**3.5**		3, 7, 19, 21, 47, 69, 81
		3.6		1, 2, 7, 15, 37, 38
	4- Marginal Analysis in Business and Economics	**3.7**		1, 5, 6, 9, 10, 11
	5- The constant e and Derivation of Exponential/Logarithm functions	**4.1**		17, 18, 19, 21, 22
		4.2		1, 3, 15, 27, 29,
		4.3		**1,** 6, 23, 25, 63
	6- Chain Rule	**4.4**		1, 5, 9, 10, 17, 35, 36, 93
	7- Implicit Differentiation	**4.5**		1, 5, 17, 18,, 22

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		Ch5. APPLICATIONS OF THE DERIVATIVE			
7--10	1- First Derivative and Graphs	**5.1**		1, 2, 3, 4, 5, 6, 7, 8, 9, 13, 58, 93
	2- Second Derivative and Graphs, L'Hopital rule	**5.2**		1(A--H), 3, 4, 15, 29, 75
		5.3		1, 6, 19, 27, 45, 51, 52
	3- Graphing rational functions	**5.4**		1 (A--M), 4, 6, 35, 73
	4- Absolute Maxima and Minima	**5.5**		1, 2, 3, 4, 11, 19, 36
	Ch6. INTEGRATION			
11--14	1- Antiderivative and indefinite integrals	**6.1**		1, 7, 19, 20, 25, 32, 51, 58, 61, 87, 107
	2- Techniques of Integration: Integration by Substitution, and by parts	**6.2**		1, 8, 9, 11, 23, 31, 37, 67, 69
		6.3		17, 18, 19, 20, 29, 32
	3- The Fundamental theorem of Calculus	**6.5**		9, 12, 21, 26,, 29, 35, 38, 61
15-	Ch6. MATRICES			
	1- Basic Matrix Operations	**6.2**	**All Examples**	**1-36 odd**
	2- Matrix Inversion			
	3- Determinants and Cramer's Rule			
	4- Solving System of Linear Equations using Cramer's Rule			
16	*REVISION*			

Wish you the best of luck

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