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AMERICAN UNIVERSITY OF SHARJAH

Department of Mathematics & Statistics

MTH 102-Mathematics for Business II

Syllabus and Course Outline

Spring 2010

Instructors' Information:

Section	Instructor	Office	Ext.	Office Hours	E-mail
At 11am and at 2pm	Ayman Badawi	Nab 262		Su, Tu, Th from 12:30-1:30	abadawi@aus.edu

Note: Other office hours are also available by appointment.

Textbook: *College Mathematics for Business, Economics, Life Sciences, and Social Sciences, 11th Ed.* by R. Barnett, M. Ziegler, and K. Byleen, Prentice Hall, NJ.

Old exams and quizzes are available on I-learn and my personal webpage
www.ayman-badawi.com

About the course: This is the second course in mathematics for business. It covers the techniques of calculus, which are required for business studies. The approach is intuitive with emphasis on applications rather than theory.

Course Outcomes: This course requires the student to demonstrate the following:

- Evaluate limit of a function.
- Understand the definition of limit, limit laws and asymptotes
- Understand the definition of derivative
- Find derivative of polynomial, exponential and logarithmic functions.
- Apply product and quotient rules, the chain rule, and implicit differentiation.
- Find derivative of polynomial, exponential and logarithmic functions.
- Find higher order derivatives of polynomial, exponential & logarithmic functions.
- Determine local and absolute extreme values (maximum and/or minimum).
- Perform curve sketching (derivatives and curve shape, graphing).
- Solve optimization problems in one variable that are relevant to business applications.
- Understand the concept of anti-derivatives and definition of integral.
- Evaluate indefinite and definite integrals for polynomial, exponential and logarithmic functions.
- Apply the substitution rule
- Understand functions of two variables and their applications.
- Find first and second order partial derivatives of two variable functions.

- Solve simple optimization problems in two variables that are relevant to business Applications. Apply the various concepts to real life application problems related to business.

Assignments & Exams Policy: Throughout this course, in-class quizzes, in addition to two midterm tests, and a comprehensive departmental final exam.

- Quizzes will be pre-announced at least one lecture in advance. **No make- up quizzes will be given.**
- **Tentative exam dates** are shown in the table below. Refer to the syllabus to see the topics that will make up the material for each exam. **With a valid written excuse and making immediate arrangements with the instructor,** a missed exam might be replaced with the grade of the final exam and/or the average grade of all tests (including final) and/or quizzes.
- **The final exam is comprehensive and common for all Mth 102 sections.** The date and time of the final exam will be scheduled by the registrar's office.

Grading and Tentative exam dates:

	% Of Grade	Dates	Material Covered	Location
Quizzes and/or Homework	15%			Classroom
Exam I	25%	March 8, Monday	Chapters 10, 11, and 12 (1-4)	In class
Exam II	25%	April 28, Wednesday	Chapters 12 (5,6),13, and 14.2	In class
Final Exam	35%		Common & Comprehensive	

Course Policies and regulations

1. **Attendance:** It is the university policy that if a student misses 15% of class sessions (**equivalent to 7 lectures for UTR classes or 5 lectures for MW classes**), he/she will be dropped from the course with an F grade.
2. **Academic integrity:** You are expected to submit your own work. Copying, cheating or plagiarism, if detected, will result in an **F** grade in the course **for all who are involved**. In addition, those involved may be reported to the administration for further disciplinary action.
3. **Office Hours and MLC:** Students are advised to take advantage of the instructor's office hours. It should be emphasized that students who miss a class without a valid written and/or legitimate excuse will not be offered a one-on-one lecture discussion during office hours to substitute the missed class. See the schedule for math learning center (MLC), last page, if you need more help.
4. **University Calendar:** It is wise to make a reminder for yourself of important dates such as last day to drop without a penalty, pre-registration, financial aid application submission, holidays, final exams, etc.

Material	HW Problems
Chapter 10	
Introduction to Limits	Sec 10.1: 9, 10, 20, 22, 28, 43, 46, 48, 50, 58, 62
Infinite Limits and Limits at Infinity	Sec 10.3: 19, 31, 33, 36, 41, 43, 45, 47, 57, 61, 63
The Derivative	Sec 10.4: 9, 13, 20, 25, 59, 62
Basic Differentiation Properties	Sec 10.5: 11, 12, 18, 27, 29, 41, 47, 48, 51, 52, 74, 76
Marginal Analysis in Business and Economics	Sec 10.7: 2, 5, 6, 11, 12, 13, 14, 16.
Chapter 11	
Derivatives of Exponential and Logarithmic Functions	Sec 11.2: 7, 11, 14, 17, 25, 30, 33, 36, 39, 42, 51, 53
Derivatives of Products and Quotients	Sec 11.3: 13, 17, 25, 43, 47, 48, 53, 61, 67, 69, 73, 79, 81, 83
The Chain Rule	Sec 11.4: 21, 31, 35, 51, 56, 61, 79, 85, 92, 93.
Implicit Differentiation	Sec 11.5: 9, 13, 18, 19, 27, 35, 40
Elasticity of Demand	Sec 11.7: 7, 11, 15, 17, 27, 35, 39, 41, 43.
Chapter 12	
First Derivatives and Graphs	Sec 12.1: 11, 18, 19, 21, 39, 48, 51, 71, 85, 86, 87
Second Derivatives and Graphs	Sec 12.2: 6, 17, 28, 37, 59, 63, 64, 65
Curve Sketching Techniques	Sec 12.4: 3, 6, 10, 11, 23, 26, 27.
Absolute Maxima and Minima	Sec 12.5: 29, 35, 38, 42, 43, 45
Optimization	Sec 12.6: 11, 12, 13, 17, 18, 33
Chapter 13	
Anti-derivatives and Indefinite Integrals	Sec 13.1: 8, 11, 18, 21, 29, 44, 51, 57, 60, 67, 75, 81, 87, 99
Integration by Substitution	Sec 13.2: 11, 14, 19, 20, 26, 27, 34, 35, 38, 51, 55, 56, 61, 67-70
The Definite Integral	Sec 13.4: 17, 25, 31, 36, 37, 39
The Fundamental Theorem of Calculus	Sec 13.5: 15, 17, 20, 29, 31, 34, 38, 51, 54, 61-63, 73, 74
Chapter 14	
Applications in Business and Economics	TBA
Chapter 15	
Functions of Several Variables	Sec 15.1: 3, 9, 12, 15, 17, 20
Partial Derivatives	Sec 15.2: 14, 19, 27, 41, 63, 66
Maxima and Minima	Sec 15.3: 7, 11, 15, 29, 31, 32