جامعة دبي
UNIVERSITY of DUBAI

General Education Department

Course code & No.: GMAT 100
Course Title: Math I for Science
Prerequisites: FMAT 002B or UD Placement Test 400 or above.
Contact Details: Email: Phone:
Class Hours: Time: Days: Room:
Office Hours: Time: Days: Room:

Brief Course Description*:

This course is designed for students whose major is in science and information technology, the course focuses on trigonometric functions, transcendental Functions, concepts of limits and continuity, differentiation, integration and their applications.

General Education Program Outcomes:
Apply basic analytical and IT skills.

Students will develop the following UD General Skills:

1. Critical thinking
2. Quantitative skills

Course Learning Outcomes (CLO):

By the end of the course the students will be able to:

(1) Employ mathematical modeling techniques using trigonometric, exponential, and logarithmic functions.
(2) Evaluate a variety of limits, including limits at infinity, one-sided limits, and limits of indeterminate forms.
(3) Develop an understanding of derivatives, and be able to discuss the conceptual relations among derivatives, rates of change, and tangent lines in the context of an applied example, and to use derivatives to model and solve real-life science problems.
(4) Develop an understanding of integrals and their applications

CLO Mapping

This table maps CLO's to program Outcomes (PO)

CLO	General Skills	State below PO
Understand the concepts of functions and their transformations and graphical representations.	2	Apply basic and analytic IT Skills.
Define and apply trigonometric functions, exponential functions and logarithmic functions.	1,2	Apply basic and analytic IT Skills.
Develop an understanding of derivatives and its applications.	1,2	Apply basic and analytic IT Skills.
Develop an understanding of integrals and its applications.	2	Apply basic and analytic IT Skills.

Assessment Scheme

This Table maps CLO to the assessment scheme.

CLO	Class Work (40%)		Mid-term Exam	Final Exam
	Individual Assignments 20%	Four Quizzes 20%	25%	35%
#1	5 marks	5 marks	10 marks	5 marks
#2	5 marks	7 marks	15 marks	8 marks
#3	5 marks	8 marks		15 marks
#4	5 marks			7 marks
Total	20	20	25	35

Teaching Methods & Use of Modern Instructional Technology

This includes various forms of interactive lessons, activities, team problem solving sessions with the intention to meet various learning styles.

Weekly Schedule

Day/ Week	Lecture	Chapter	Chapter Objectives	CLO	Assignments	Assessment
1	Trigonometric Functions	1	To evaluate trigonometric functions of any angle	1	Exercise Page:56	
2	Transcendental Functions	7	• To recognize and evaluate Exponential Functions. • To recognize and evaluate natural exponential functions.	1	Exercise Page: 484, 493	
3	Inverse Trigonometric Functions	7	• To define and evaluate inverse of each trigonometric functions.	1	Exercise Page:530	Quiz 1
4	Limits	2	• To find Limits of Functions, when they exist. • To evaluate Limits of Quotients Polynomials	2	Exercise Page: 89	
5	limits at infinity	2	• To evaluate Limits involving infinity.	2	Exercise Page: 113	
6	Limits involving $\frac{\sin\theta}{\theta}$	2	• To evaluate Limits of Trigonometric Functions	2	Exercise Page: 113	Quiz 2
7	Differentiation	3	• To define the derivative of a function as a limit • To find derivatives of Constant Functions. • To find derivatives of Power Functions. • To find the derivatives of sums, differences, product of Functions.. • To use the Quotient Rule to find the derivative of the certain functions. • To find the derivatives of the power Functions.	3	Exercise Page: 169, 179	
8	Derivative of Trigonometric Functions	3	• To find the derivative of trigonometric function.	3	Exercise Page: 188, 201,	Mid-Term Exam

9	Derivative Applications (Related Rates)	3	• To use derivatives to model and solve real-life science problems.	3	Exercise Page:218	
10	Derivative of Transcendental Functions with their applications.	7	• To find the derivative of natural logarithmic functions. • To find the derivative of natural exponential functions. • To use derivatives to model and solve real-life problems.	3	Exercise Page: 484, 493	
11	Derivative of inverse of trigonometric functions	7	• To find the derivative of inverse of trigonometric functions.	3	Exercise Page:530	Quiz 3
12	Antiderivatives	4	• To find antiderivatives of functions. • To evaluate the indefinite integrals.	4	Exercise Page 314	
13	Indefinite Integrals	4	• To solve initial value problems	4	Exercise Page:314	
14	Definite Integrals	5	• Use fundamental theorem of calculus to evaluate the indefinite integrals.	4	Exercise Page:365	Quiz 4
15	Integrals Applications	5	• To evaluate the total area using definite integrals. • To evaluate the volume of a specific region using indefinite integrals.	4	Exercise Page:383	Final Exam Date is specified on Class Schedule

Educational Resources

Educational Resource	Description	Comments
Textbooks Required	George B. Thomas, Jr., University *Calculus*, Pearson Addison-Wesley Publishing Company, Inc., 11th ed. 2009.	
Supporting readings:	(1) Smith, Robert T., and Minton, Robert B., Calculus, McGraw-Hill, Company, New York, 2007.	