Mathematics course Description

بسم الله الرحمن الرحيم

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Shaqra University
College of Computing and Information Technology

Course Title	**:**	Mathematics (1)
Course Code	**:**	111 Math
Number of Credit Hours	**:**	3 (2+2)
Course Prerequisite	**:**	

Text book: Calculus Early Transcendentals 8th Edition by James Stewart.

Course Description: This course is designed to develop the topics of differential and integral calculus. Emphasis is placed on limits, continuity, derivatives and integrals of algebraic and transcendental functions of one variable. Upon completion, students should be able to select and use appropriate models and techniques for finding solutions to derivative-related problems.

Grades:

Percentage	Description
40%	2 Exams (20% each)
10%	Homework
10%	Quizzes
40%	Final
100%	Total

Course objectives:

At the end of the course students should be able to:

1- Evaluates limits.
2- Prove basic theorems using limits of the difference equations.
3- Differentiate algebraic and trigonometric functions using key theorem.
4- Find the tangent line for a given graph at a given point.
5- Solve maximum and minimum problems using differentiation.
6- Solve related rate problems.
7- Apply methods of calculus to curve sketching.
8- Anti-differentiation, Areas, fundamental theorem of Calculus, evaluating definite integrals by substitution rules and.

Course contents and schedule

Week 1	**1. Precalculus Review** Definition of Functions, Exponential, logarithmic and Trigonometric Functions, Inverse functions.
Week 2	**2. Limits and Derivatives** The limit of a function Calculating limits using the limit laws
Week 3	**3. Continuity**
Week 4	Limits at infinity; asymptotes Tangent lines and rate of change The derivative as a function
Week 5	**4. Differentiation rules** Basic Derivatives laws Velocity and Laws of Differentiation: Product and Quotient
Week 6	Derivatives of trigonometric functions derivative of exponential and logarithmic functions Chain rule
Week 7	**5. Exam I** Review of Exam I: Review all prior homework and solving exercises Exam I
Week 8	Implicit Differentiation **6. Applications of differentiation** Related Rates
Week 9	Maximum and minimum values The mean value theorem, Increasing /Decreasing
Week 10	Concavity Derivatives and the shape of curves Indefinite forms and L'Hopital's rule Summary of curve sketching
Week 11	**7. Exam II** Review of Exam II: Review all prior homework and solving exercises Exam II

Week 12	Optimization Problems Anti-derivatives
Week 13	**8. Integrals** The definite integral The fundamental theorem of calculus
Week 14	Indefinite integrals and the net change theorem The substitution rule
Week 15	**9. Review for the final exam**