Republic of Iraq

Ministry of Higher Education and Scientific Research
Supervision and Scientific Evaluation Apparatus

College: Shatt Al-Arab University
Department: Civil Engineering
Stage: 1st stage
Lecturer name: Shaheed Muhammed Ali
Academic title: Ass. Lecturer

Course Weekly Outline

Name	Shaheed Muhammed Ali					
E-mail address	Shaheed.mohammedali@sa-uc.edu.iq					
Course name	Mathematics-1					
Course objective	1. Good understanding of General Mathematics. 2. To give information about Integrations and derivations and how they are used in the engineering field. 3. Helping students to connect mathematics with civil engineering. 4. better understanding of integration and derivations and their importance of role in civil engineering					
Course description	Full course of teaching differentiations and integrations and their engineering applications.					
References	Calculus, International Edition, By Thomas, 2005.					
External sources	Calculus with Analytical Geometry, Fourth Edition, By Robert Ellis and Denny Gulick, 1990					
Course assessment	**Home work**	**Quizzes**	**Report**	**Project**	**Mid-term exam**	**Final exam**
	10	**10**	**10**	**10**	**10**	**50**
General notes						

Republic of Iraq

Ministry of Higher Education and Scientific Research
Supervision and Scientific Evaluation Apparatus

College: Shatt Al-Arab University
Department: Civil Engineering
Stage: 1st stage
Lecturer name: Shaheed Muhammed Ali
Academic title: Ass. Lecturer

Course Weekly Outline

Week No.	Theoretical	Aims
1	Algebraic Preliminaries: Numbers, Sets	Highlighting the importance of differentiation and integration for the branches of science and engineering, and the student's awareness of the relationship between them. Presentation of the basic rules of differentiation and integration and their applications. Accustoming the student to sound logical thinking and acquiring the skills necessary to solve problems
2	Algebraic Preliminaries: Inequalities & Absolute value.	
3	Functions: Domain, Range, graphs,	
4	Functions: Symmetry, Asymptotes	
5	Limits: Definition of Limit, Theorems,	
6	Continuity, One-Sided Limits,	
7	Limits at Infinity, L Hopital's rule.	
8	Derivatives: Definition, Power and Sum Rules, Product and Quotient Rules,	
9	Derivatives: Chain rule, High-Order derivatives, Implicit differentiation.	
10	Applications of Derivative: Maximum and minimum, mean value theorem,	
11	Applications of Derivative: Increasing and Decreasing Functions, Concavity and Points of inflection, Second Derivative Test.	
12	Definite Integration: Definition, Integral Theorems, Length of a Curve, Areas	
13	Definite Integration: Volume of Solids, Surface Area, Indefinite Integrals.	
14	Transcendental Functions: Trigonometric Functions, Graphs, Derivatives of trigonometric functions, Inverse trigonometric functions, Graphs	
15	Derivatives of Inverse trigonometric functions, Natural Logarithm Functions, Exponential Functions, Functions a^u and $\log_a u$.	