Republic of Iraq

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

University: Shatt Al-Arab
College: Engineering
Department: Civil Engineering
Stage: 3rd stage
Lecturer name: Khalid A. Subber
Academic title: Assistant Lecturer

Course Weekly Outline

Name	**Khalid Abdul Jabbar. Subber**			
E-mail address	khalid_subber@sa-uc.edu.iq			
Course name	Engineering mathematics			
Course objective	The course aims to learn numerical methods to solve mathematical problems			
Course description	Acquire complete knowledge of numerical methods for solving algebraic equations, finding roots, and approximation...			
References	Numerical Analysis by Richard L. Burden			
External sources	Numerical Analysis of Ordinary Differential Equations and Its Applications			
Course assessment	**Lab.**	**Quizzes and assessment**	**Mid-term exam**	**Final exam**
	10	**10**	**20**	**60**
General notes				

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Week No.	Theoretical	Experimental	Aims
1	Introduction to Numerical Methods		Understand and comprehend numerical methods in solving algebraic problems, approximation, finding roots, differentiation and integration, and solving differential equations.
2	Knowing what numerical methods and approximate solution are and how to calculate the error in the approximate solution		
3	Applying the bisection, fixed point, Newton-Raphson and modified Newton methods in solving algebraic equations		
4	Applying the bisection, fixed point, Newton-Raphson and modified Newton methods in solving algebraic equations		
5	Solving a set of simultaneous algebraic equations numerically		
6	Solving a set of simultaneous algebraic equations numerically		
7	Applying Taylor series in approximating functions		
8	Performing the differentiation of functions numerically		
9	Performing the integration of different functions numerically		
10	Applications of numerical differentiation and integration		
11	Applying the Euler, Runge-Kutta and finite difference methods in solving ordinary differential equations		
12	Applying the finite difference method in solving partial differential equations		
13	Applying the finite difference method in solving partial differential equations		
14	Finding the curve that fits a set of points Performing interpolation and induction in approximating functions		
15	Finding the curve that fits a set of points Performing interpolation and induction in approximating functions		