University of Baghdad
College of Science for Women
Department of Mathematics
Year: Second

Lecturer Name: Jenan Ahmed Ali
Academic Status: Lecturer
Qualification: M.Sc. In Mathematics

Course Summary

Course Instructor	Jenan Ahmed Ali
E-mail	
Title	Ordinary Differential Equations
Course Coordinator	
Course Objective	The Student Lear ns : • To Classify and Solve D.Es by using different methods of solutions. • How To Determine the region of Existence & Uniqueness of solutions . • To Understand the importance of D.Es in Applications and How D.Es can arise as Mathematical Models in physical , Geometrical , Biological and Chemical problems.
Course Description	Giving : Definitions , Basic Theorems , Methods of Solutions of D.Es , Many illustrative Examples and Applications to problems in different fields.
Textbook	A First Course in Differential Equations with Modeling Applications , D.G. Zill
References	Elementary Ordinary Differential Equations , B.Rai and D.B.Choudhury

Course Assessments	Term Tests	Laboratory	Quizzes	Project	Final Exam
	As (30%)		**As (10 %)**	-------	**As (60%)**

Course Weekly Outlines

Week	Topics Covered	Lab. Experiment Assignments
1	Introduction To Differential Equations(D.Es)	------------------------------
2	Basic Concepts	
3	Finding The D.E from The General Solution	
4	Existence And Uniqueness Theorem	
5	Existence And Uniqueness Theorem	---------------------------
6	First Order D.Es : Separable D.Es	------------------------------
7	D.Es Of Homogeneous Type	
8	D.Es With Linear Coefficients - Intersected Lines ; Parallel Lines	------------------------------
9	Exact D.Es – Integrating Factors	---------------------------
10	Linear D.Es	---------------------------------
11	Bernoulli D.E ; Riccati D.E	
12	Nonlinear D.Es :	
13	Higher Order D.Es – Reduction Of Order Method	
14	First Order And Higher Degree D.Es	
15	Examination	
16	Higher Order Linear D.Es:	---------------------------------
17	Basic Concepts	---------------------------------
18	Linear D.Es With Constant Coefficients : Homogeneous – Auxiliary Equation	
19	Non Homogeneous – Undetermined Coefficients Method	
20	Non Homogeneous – Variation Of Parameters Method	
21	Linear D.Es With Variable Coefficients : Cauchy-Euler D.E	------------------------------------
22	Using A Known Solution To Find Another	
23	Laplace Transform : Basic Concepts	
24	Solving D.Es by Using Laplace Transforms	
25	Solving D.Es by Series : Power Series Solutions	--
26	Frobenius Method – Bessel D.E	
27	Applications in Geometry ; Physics	-------------------------------------
28	Applications in Biology ; Chemistry	---------------------------------
29	Examination	-----------------------------------