

بسم الله الرحمن الرحيم

Republic of Iraq
The Ministry Of Higher Education
& Scientific Research



University: Diyala
College: engineering
Department:
Engineering Analysis
Stage: 3rd
Lecturer name: Samir Gh. YAHYA
Qualification: BSc, MSc and PhD
Place of work: University of Diyala

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Course Instructor	Samir Ghazi YAHYA				
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Title	Engineering Analysis				
Course Coordinator	Annual				
Course Objective	TO Teach the students the methods of solution of advanced engineering mathematics and to learn about engineering mathematics.				
Course Description	Special functions, Laplace transforms, The Transfer Function and inverse transform, Some Problems Leading to Ordinary Differential Equations, Fourier Series, Double Fourier Series, Partial Differential Equations				
Textbook	Advanced Engineering Mathematics (Erwin Kreyszig) , Wiley International edition.				
Course Assessments	Term Tests	Laboratory	Quizzes	Project	Final Exam
General Notes					

Course Weekly Outline

Week	Date	Topes Covered	Lab. Experiment Assignment s	Notes
1	10/2016	First Order Differential Equations, background to Ordinary Differential Equations, Some Problems Leading to Ordinary Differential Equations		
2	10/2016	Method of solution of first-order differential equations, Separable Equations, Examples, Homogeneous		
3	10/2016	Exact Equations, Examples, Integrating Factors, Examples		
4	10/2016	Linear First Order Equations, Examples, The Bernoulli Equation, Examples		
5	11/2016	Special case , The Solution Of Differential Equations By Replacement The Variables, Examples , when the coefficients of dx and dy are linear functions and have two variables in equation, Examples		
6	11/2016	Non-homogeneous Systems, Homogeneous Linear Constant Coefficient Second Order Equations, Examples, Homogeneous Linear Higher Order Constant.		
7	11/2016	Homogeneous Linear Higher Order Constant Coefficient Equations, Examples		
8	11/2016	Undetermined Coefficients: Particular Integrals, Cauchy–Euler Equation, Variation of Parameters and the		
9	12/2016	Variation of Parameters and the, Examples, constant – coefficient systems. Phase plane method,		
11	12/2016	Matrix Approach to Linear Systems of Differential Equations , Examples		
11	12/2016	Power series method, theory of power series method, Examples		
12	12/2016	A General Approach to Power Series Solutions of Homogeneous Equations,		
13	01/2016	Laplace Transform: Fundamental Ideas, Examples		
14	01/2017	Inverse transform ,Examples, transform of derivatives and integrals ODEs, Examples		
15	01/2017	Differentiation and integration of transforms, Examples		
16	01/2017	Laplace Transform : general formulas , Examples		

Half – year break				
17	19/02/2017	Introduction to Fourier Series, Convergence of Fourier Series and Their Integration and Differentiation, Examples		
18	02/2017	Fourier Sine and Cosine Series, Other Forms of Fourier Series, Examples		
19	02/2017	Frequency and Amplitude Spectra of a Function , Double Fourier Series, Examples		
21	03/2017	Complex numbers and functions , complex plane , power and roots, example		
21	03/2017	Power series , Taylor series , examples		
22	03/2017	Function given by power series , Taylor and Maclaurin series, examples		
23	03/2017	What Is a Partial Differential Equation, The Method of Characteristics, Examples		
24	03/2017	Wave Propagation and First Order Partial Differential Equations Generalizing Solutions: Conservation Laws and Shocks, examples		
25	04/2017	The Three Fundamental Types of Linear Second Order Partial Differential Equations Classification and Reduction to Standard Form of a Second Order Constant Coefficient Partial Differential Equation for $u(x, y)$, examples		
26	04/2017	Boundary Conditions and Initial Conditions , Examples , Waves and the One-Dimensional Wave Equation, Examples		
27	04/2017	The D'Alembert Solution of the Wave Equation and Applications, examples		
28	04/2017	Separation of Variables, examples, Some General Results for the Heat and Laplace Equation, examples		
29	05/2017	An Introduction to Laplace		
31	05/2017	Fourier Transform Methods for Partial Differential Equations, examples		

INSTRUCTOR Signature:

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