AL IMAM MOHAMMAD IBN SAUD ISLAMIC UNIVERSITY
COLLEGE OF ENGINEERING
DEPARTMENT OF CIVIL ENGINEERING

Course Information	
Course Code & Name	MATH235 DIFFERENTIAL EQUATIONS **TOTAL CREDITS: 3** (Theory Hours: 3, TUTORIAL : 1)
Prerequisite/s	MATH 106 Calculus II

Course Description	
Techniques and applications of ordinary differential equations: First order equations, linear equations of higher order, systems of linear equations with constant coefficients, reduction of order, including Fourier series and boundary-value problems, and an introduction to partial differential equations	

Textbook	
Title	Fundamentals of Differential Equations
Author	Nagle, Saff, and Snider
Publisher	Pearson, Eighth Edition

Course Contents
First Order Equations: - First order differential equations, initial value problems, separable equations, linear equations. - Homogeneous equations, exact equations, integrating factor techniques, Bernoulli equations. **Second Order Equations:** - Linear homogeneous equations with constant coefficients - Non-homogeneous linear equations: the method of undetermined coefficients - Variation of parameters, Cauchy-Euler equations, Reduction of order formula. **Laplace Transforms:** - The Laplace transform and its properties, tables of Laplace transforms - Inverse Laplace transforms and solving initial value problems using Laplace transforms **Series Solutions of Differential Equations:** - Review of power series and the radius of convergence. Series solution to linear equations. **Linear Systems of Differential Equations:** - Homogeneous linear systems of differential equations with constant coefficients.

Academic Coordinator   **Official Stamp**