1.	Title of the course	Differential Equations for Engineers
2.	Course number	MA502L
3.	Structure of credits	2-0-0-2
4.	Offered to	PG
5.	New course/modification to	Modification To MA5023/12
6.	To be offered by	Department of Mathematics and Statistics
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	**Course Objective(s):** To introduce the ordinary/partial differential equations (ODEs/PDEs) and their classifications. To impart knowledge on solvability conditions of ODEs. To apply power series and the Frobenius method to solve ODEs. To solve PDEs using the variable separable method.	
10.	**Course Content:** Ordinary differential equations: existence and uniqueness, first-order linear equations, initial value problems, exact solutions, second-order linear equations, variation of parameters, Green's functions, power series solutions, ordinary and singular points, Frobenius series, Legendre and Bessel's function, Sturm-Liouville boundary value problems, Fourier series, Fourier integrals; Partial differential equations, classifications, wave equations, heat equations, initial and boundary conditions, Laplace equations in Cartesian, polar and spherical coordinates.	
11.	**Textbook(s):** 1. Kreyszig E, *Advanced Engineering Mathematics*, 10th Edition, John Wiley & Sons (2010). 2. Zill D G, *A First Course in Differential Equations with Modeling Applications*, 10th Edition, Brooks/Cole (2013).	
12.	**Reference(s):** 1. Amarnath T, *An Elementary Course in Partial Differential Equations*, 2nd Edition, Jones & Bartlett Learning (2009). 2. Cooper J, *Introduction to Partial Differential Equations with Matlab*, 1st Edition, Birkhauser (1998). 3. Simmons G F, *Differential Equations with Applications and Historical Notes*, 2nd Edition, McGraw-Hill Higher Education (2017). 4. Wylie C R and Barrett L, *Advanced Engineering Mathematics*, 6th Edition, McGraw-Hill Higher Education (1995).	