1.	Title of the course	Mathematical Physics I
2.	Course number	PH506L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To PH5101/10
6.	To be offered by	Department of Physics
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	**Course Objective(s):** To equip students with the necessary mathematical tools to describe physical phenomena by introducing the essentials of linear algebra, tensors, ordinary, partial differential equations, and probability theory.	
10.	**Course Content:** Linear algebra: vectors, linear spaces, inner and outer product; Orthogonalization procedures, system of linear equations, matrix decomposition techniques; Tensors; Ordinary differential equations (ODE) of first and second order, Frobenius method, inhomogeneous linear ODEs, Sturm-Liouville theory, Green's functions, partial differential equations of first and second order, Laplace and Poisson's equations, diffusion equation; Probability theory: moments & generating functions, distribution functions, central limit theorem.	
11.	**Textbook(s):** 1. Arfken G, Weber H and Harris F, *Mathematical Methods for Physicists: A Comprehensive Guide*, Academic Press (2013). 2. Spiegel M R, Lipschutz S and Spellman D, *Schaum Outline Series: Linear Algebra*, McGraw-Hill (2017).	
12.	**Reference(s):** 1. Balakrishnan V, *Mathematical Physics with Applications, Problems and Solutions*, Ane Books (2017). 2. Dass T and Sharma S K, *Mathematical Methods in Classical and Quantum Physics*, Universities Press (1998). 3. Riley K F, Hobson M P and Bence S J, *Mathematical Methods for Physics and Engineering*, Cambridge University Press (2018).	