

Teaching Plan

Name of the Faculty: Dr. Dhanpal Singh

Name of the Course: B. Sc. (Hons.) Mathematics

Semester : IV Sec (if any): None

Title of the Paper : IV.1 Differential Equations and Mathematical Modeling II

Month	Topics Covered	References
January	Introduction, classification, construction and geometrical interpretation of first order partial differential equations (PDE), method of characteristic and general solution of first order PDE, canonical form of first order PDE, method of separation of variables for first order PDE. Mathematical modeling of vibrating string, vibrating membrane.	Tyn Myint-U and Lkenath Debnath, <i>Linear Partial Differential Equations for Scientists and Engineers</i> , Springer, Indian reprint, 2006.
February	Conduction of heat in solids, gravitational potential, conservation laws and Burger's equations, classification of second order PDE, reduction to canonical forms, equations with constant coefficients, general solution. Cauchy problem for second order PDE, homogeneous wave equation.	
March	Initial boundary value problems, non-homogeneous boundary conditions, finite strings with fixed ends, non-homogeneous wave equation, Riemann problem, Goursat problem, spherical and cylindrical wave equation. Method of separation of variables for second order PDE, vibrating string problem, existence and uniqueness of solution of vibrating string problem.	
April	Heat conduction problem, existence and uniqueness of solution of heat conduction problem, Laplace and beam equation, non-homogeneous problem.	

Note: The first test will be conducted at the end of February and second at the start of April. The assignment will be given in the 3rd week of March and submission date will be at the end of March.

The schedule of Practicals may also be provided

Teaching Plan

Name of the Faculty: Anirban Chatterjee

Name of the Course: Physics (H)

Semester : IV Sec (if any) : N.A.

Title of the Paper : MATHEMATICS-II(PHHT-413)

Month	Topics Covered	References
<u>January</u>	Sequence of function, Series of functions of real variables	1) A course in calculus and real analysis by Ghorpade and limaye
<u>February</u>	Power Series, Improper integral, Differentiation under the sign of integration, Random variables, Distribution.	2) Introduction to mathematical statics by Hogg, Mckean, and Craig
<u>March</u>	Statistical Inference, Sampling distribution, Test of significance based on t, F and Chi-square distribution.	3) Mathematical Statistics with application (7 th edition) by Miller, Marylees and Freund's.
<u>April</u>	Revision, tests and evaluation of assignments.	

Note : The tentative date of Assignment/test/Project may also be provided.

The schedule of Practicals may also be provided