

Lesson Plan (Even semester)

(January 2019 to May 2019)

B. Sc. (Hons) Mathematics (Semester IV).

Subject: C-8 Partial Differential Equation

Teacher: Mr. Basant Kumar Mishra

References:	1. Myint-U, Tyn & Debnath, Lokenath. (2007). Linear Partial Differential Equation for Scientists and Engineers (4th ed.). Springer, Third Indian Reprint, 2013
	2. Sneddon, I. N. (2006). Elements of Partial Differential Equations, Dover Publications. Indian Reprint.
	3. Stavroulakis, Ioannis P & Tersian, Stepan A. (2004). Partial Differential Equations: An Introduction with Mathematica and MAPLE (2nd ed.). World Scientific

Unit	Week	Topics Covered
1	Week-1 January 1-4, 2019	Introduction, Classification, Construction of first order partial differential equations (PDE).
	Week-2 January 7-11, 2019	
	Week-3 January 14-18, 2019	Method of characteristics and general solution of first order PDE. Canonical form of first order PDE, Method of separation of variables for first order PDE
2	Week-4 January 21-25, 2019	The vibrating string, Vibrating membrane, Gravitational potential, Conservation laws.
	Week-5 January 28 - Feb 1, 2019	
	Week-6 February 4-8, 2019	Reduction to canonical forms, Equations with constant coefficients, General solution Gravitational potential, Conservation laws and Burger's equations,
3	Week-7 February 11-15, 2019	Mathematical modeling of vibrating string and vibrating membrane,
	Week-8 February 18-22, 2019	
	Week-9 Feb 25- March 1, 2019	The Cauchy problem for second order PDE. Homogeneous wave equation. Non-homogeneous boundary conditions,
	Week-10 March 4-8, 2019	
	Week-11 March 11-15, 2019	Initial boundary value problem, Test and Assignment for Unit 2 & 3

4	Week-12	Method of separation of variables for second order PDE
	March 25-29, 2019	
	Week-13	Finite string with fixed ends, Non-homogeneous wave equation, Goursat problem.
	April 1-5, 2019	
	Week-14	Existence and uniqueness of vibrating string problem. Heat conduction problem.
	April 8-12, 2019	
	Week-15	Existence and uniqueness of the solution of heat conduction problem. Non-homogeneous problem.
	April 15-19, 2019	
Week-16	Revision, Doubt Class, Test(if required) and Assignments submission.	
April 22-26, 2019		