

PROGRAMME NAME: : B.A programme

COURSE NAME : Differential Equations

SEMESTER DURATION: January to May

Week	Topic(s)	Teaching Methodology Adopted/ Continuous Internal Evaluation
1	First order exact differential equations	Lectures
2	Rules for finding integrating factors	Lectures/Discussion
3	First order higher degree equations solvable for x, y, p	Assignments/Quizzes
4	Clairut's equations.	Presentations
5	Wronskian and its properties,	Case Study
6	Linear homogeneous equations with constant coefficients.	Demonstration
7	The method of variation of parameters, Euler's equations.	Lectures
8	Simultaneous differential equations, Total differential equation	Discussion/Seminars
9	Order and degree of partial differential equations, Concept of linear partial differential equations, Formation of first order partial differential equations.	Tutorials
10	Statement of Theorem 2 with applications	Discussion
11	Linear partial differential equations of first order and their solutions.	Lectures/Practicals

12	Statements of Theorems 4, 5, and 6 with applications, Concept of non-linear partial differential equations, Lagrange's method.	Practicals
13	Charpit's method	Case Study
14	Classification of second order partial differential equations into elliptic, Parabolic and hyperbolic through illustrations only.	Case Study

Course Objectives: The course aims at introducing ordinary and partial differential equations to the students and finding their solutions using various techniques with the tools needed to model complex real-world situations.

Course Learning Outcomes: The course will enable the students to understand:

- i) Wronskian and its properties.
- ii) Method of variation of parameters and total differential equations.
- iii) Lagrange's method, and Charpit's method for solving PDE's of first order.