Differential Equations

Course Code: BEB507
Contact Hours: 60

Credit: 04 (L-3, T-1, P-0)
MM: 100

Course Objectives:

- The students will know about the Law of Homogeneous linear differential equations.
- To provide the concept of Legendre and Bessel functions.
- To make able to understand Partial differential equations of the first order.
- To make them clear about Linear partial differential equations with constant coefficients.

Course Outline:

Formation of a differential equation (D.E.), Degree, order and solution of a D.E, Equations of first order and first degree : Separation of variables method, Solution of homogeneous equations, linear equations and exact equations, Linear differential equations with constant coefficients, Homogeneous linear differential equations.

Differential equations of the first order but not of the first degree, Clairaut's equations and singular solutions, Simultaneous linear differential equations with constant coefficients, Linear differential equations of the second order (including the method of variation of parameters),

Series solutions of second order differential equations, Legendre and Bessel functions (Pn and Jn only) and their properties.

Order, degree and formation of partial differential equations, Partial differential equations of the first order, Lagrange's equations. Charpit's general method, Linear partial differential equations with constant coefficients.

Course Outcomes:

After completing the course, students will be able to:

1. Understand various Laws of Order, degree and formation of partial differential equations.
2. Analyze the Differential equations of the first order.
3. Identify the difference between Legendre and Bessel functions.
4. Understand the Linear partial differential equations with constant coefficient.
5. Evaluate Lagrange's equations.
6. Analyze & Solve the Simultaneous linear differential equations with constant coefficients.

Suggested Books:

1. B. Rai, D. P. Choudhury and H. I. Freedman, A Course in Ordinary Differential Equations, Narosa Publishing House, New Delhi, 2002.

2. E. A. Coddington, An Introduction to Ordinary Differential Equations, Prentice Hall of India, New Delhi, 1968

3. T. Amaranath, An Elementary Course in Partial Differential Equations, Narosa Publishing House, New Delhi, 2005

Dean
Faculty of Education
Invertis University
Bareilly-243123, U.P

Head
Department of Education
Faculty of Education & Mass Comm.
Invertis University, Bareilly (UP)

Registrar
Invertis University
Bareilly