Lalit Narayan Mithila University, Darbhanga
Multidisciplinary Course (MDC)
Mathematics for All Streams (Semester III)

Course Details

Course Code: MDC-03
Title: Ordinary Differential Equations
Credits: 3 (Lecture: 30)
Objective: Understand the concept of Ordinary Differential Equation

Course Structure

Unit 1 : Differential equations of first order and first degree (12 Lecturers)
Formulation of Differential equations
Order and degree of Differential equations
Variable separable Differential equations
Equations reducible to Variable separable
Homogeneous Differential equations
Equations reducible to Homogeneous forms
Linear Differential equations
Equations reducible to Linear forms
Bernoulli equation
Exact Differential equations
Equations reducible to Exact forms

Unit 2 : Differential equations of first order but not first degree (8 Lecturers)
Equation solvable for x
Equation solvable for y
Equation solvable for p
Claiaraut's form
Singular Solutions
General and Particular solutions
Orthogonal Trajectories of family of curves
Wornskian and its properties

Unit 3 : Linear Differential equations order greater than one with constant coefficients (6 Lecturers)
Complementary Functions
Particular Inegrals

Unit 4 : Second order Linear Differential equations with variable coefficients (4Lecturers)
Use of a known solution to find another
Normal form
Method of undetermined coefficient
Variation of parameter

Evaluation
Internal Assessment: 30 Marks
End-Semester Examination: 70 Marks

References

1. Simmons, George F. (2016). Differential Equations with Application and Historical Notes. Tata-McGraw Hill Publishing Company Limited, New Delhi
2. Raisinghania, M. D. (2020). Ordinary and Partial Differential Equations(20th ed.). S. Chand Publication.
3. Bronson, R. & Coasta, Gabriel B. (2021). Schaum's Outline of Differential Equations (5th ed.). McGraw Hill
4. Prasad, Lalji. (2019). Differential Equations. Paramount Publication.

Syllabus Committee

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