

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY
Ramapuram Campus

FACULTY OF ENGINEERING AND TECHNOLOGY

Department of Mathematics

Odd Semester 2022 – 2023

Innovative Teaching Methods

21MAB101T – Calculus and Linear Algebra

Pedagogy 6 – Inductive and Deductive Learning

Inductive Method: It is a teaching method that promotes learning through inductive reasoning where skills of observation, comparing, classifying are used to arrive at generalizations or definition of concepts.

Deductive Method: It is a teaching method that promotes learning through deductive reasoning where rules / generalization / definitions of concepts are learnt first and then specific examples are studied for further understanding.

Linear Differential Equation with Variable Coefficients

Inductive Method

The students are induced or motivated to find the solution of second order linear differential equations with constant coefficients by the usual methods.

Deductive Method

The students are encouraged to solve second order linear differential equations with variable coefficients by applying the tricks involved in Cauchy-Euler differential equations and Legendre's differential equation.

High Level Problems

1. Solve $(x^2 D^2 + 4x D + 2)y = e^x$.
2. Solve $(x^2 D^2 + x D - 9)y = \frac{5}{x^2}$.
3. Solve $[(5 + 2x)^2 D^2 - 6(5 + 2x) D + 8]y = 0$.
4. $[(3 + 2x)^2 D^2 - (3 + 2x) D - 12]y = 6x$

Staff incharge

HOD / Mathematics