

Dual Enrollment Differential Equations

Unit 1: First Order Differential Equations (6 days)

- 1.1 Introduction to Differential Equations
- 1.2 First Order Linear Differential Equations
- 1.3 Exact Equations
- 1.4 Substitution and Transformation

Unit 2: Second Order Differential Equations (6 days)

- 2.1 Homogeneous 2nd Order Differential Equations
- 2.2 Nonhomogeneous 2nd Order Differential Equations
 - Method of Variation of Parameters
 - Method of Undetermined Coefficients

Unit 3: LaPlace Transforms (6 days)

- 3.1 LaPlace Transforms (Definition)
- 3.2 Inverse LaPlace Transforms
- 3.3 Solve a Differential Equation by LaPlace Transforms
- 3.4 Solve a system of Differential Equations by LaPlace Transforms

Unit 4: Power Series Solutions & Diagonalization (5 days)

- 4.1 Taylor Series Solutions to Differential Equations
- 4.2 Power Series Solutions to Differential Equations
- 4.3 Diagonalization

Unit 5: Numerical Methods (5 days)

- 5.1 Euler's Method
- 5.2 Heun's Method
- 5.3 Nystrom's Method
- 5.4 Three-Term Taylor Series Method
- 5.5 Runga-Kuta