

Differential Equations Syllabus

Separable Variables

Homogeneous Equations

Exact Equations

Linear Equations

Bernoulli Equations

Applications of Linear Equations and nonlinear equations

Initial-Value and Boundary-Value Problems

Linear Dependence and Linear Independence

Solutions of Linear Equations

Constructing a second solution from a known solution Homogeneous linear equations with constant coefficients Solving nonhomogeneous linear equations

Simple Harmonic Motion Damped motion

Power series solutions around ordinary points

Laplace Transform

Inverse Laplace Transform

Translation theorems and derivatives of a transform Transforms of derivatives and integrals

Transform of a periodic function

Systems of linear first order equations

Eigenvalue methods for systems of homogeneous linear equations

Euler's Numerical methods