

Differential Equations

B.Sc.Engineering – Level 2 (semester 1)

MA2012

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2009

Course Outline

- **Laplace Transform and applications**

- Laplace transform of elementary functions and some basic theorems.
- Application of Laplace transforms to differential equations and systems of differential equations.
- Transfer functions, Convolution theorem.

- **Fourier Series approximation**

- Fourier coefficients
- Dirichlet's condition
- Odd and even functions
- Half range series and Trigonometric approximation to discrete data

- **Partial Differential Equations**

- Classification of second order partial differential equations
- Solutions by separation of variables
- Fourier series application to boundary value problems

- **Ordinary linear differential Equations with variable coefficients**

- Solutions in series form
- Special functions (e.g/Bessel,Legendre)- singular points.
- Existence and uniqueness of the solution.