## Course Number and Name

BMA301 - MATHEMATICS - III

## Credits and Contact Hours

4 & 75

## Course Coordinator’s Name

Ms P. Jagadeeswari

## Text Books and References

### Text Books:

### References:
6. www.everydaymathonline.com

## Course Description

- To equip students with adequate knowledge of Mathematics.
- To formulate problems in Engineering, and solve them analytically

### Prerequisites

- Mathematics - I & II
- Nil

### Co-requisites

- required, elective, or selected elective (as per Table 5-1)
- required

## Course Outcomes (COs)

- CO1 - Solve PDE of second and higher order with constant coefficients.
- CO2 - Expand given functions by using the concept of Fourier series
- CO3 - Solve many of the Engineering models of Heat equations and Wave equations which are PDEs with boundary conditions
- CO4 - Solve many problems in Automobile, Medicine, Electronic Engineering which are Differential equations of linear or non-linear
- CO5 - Solve differential equations by Laplace transforms
- CO6 - To understand about Fourier Transform which is necessary for signal processing.

## Student Outcomes (SOs) from Criterion 3 covered by this Course

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List of Topics Covered

UNIT I  PARTIAL DIFFERENTIAL EQUATIONS  9+6
Formation - Solutions of standard types of first order equations - Lagrange's Linear equation - Linear partial differential equations of second and higher order with constant coefficients.

UNIT II  FOURIER SERIES  9+6
Dirichlet's conditions - General Fourier series - Half-range Sine and Cosine series - Parseval's identity - Harmonic Analysis.

UNIT III  BOUNDARY VALUE PROBLEMS  9+6
Classification of second order linear partial differential equations - Solutions of one-dimensional wave equation, one-dimensional heat equation - Steady state solution of two-dimensional heat equation - Fourier series solutions in Cartesian coordinates.

UNIT IV  LAPLACE TRANSFORMS  9+6
Transforms of simple functions - Basic operational properties - Transforms of derivatives and integrals - Initial and final value theorems - Inverse transforms - Convolution theorem - Periodic functions - Applications of Laplace transforms for solving linear ordinary differential equations upto second order with constant coefficients and simultaneous equations of first order with constant coefficients.

UNIT V  FOURIER TRANSFORMS  9+6