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:

1. Kreyszig, E."Advanced Engineering Mathematics"8th Edition, John Wiley and Sons, (Asia) Pvt., Ltd, Singapore, 2000
2. Monty J.Strauss, Gerald L.Bradley, and Karl L.Smith. Calculus" 3rd Edn.[Prentice Hall] University Bookstore, New Delhi.

References:

1. Narayanan, S.ManicavachangamPillay, T.K.Ramanaiah, G."Advanced mathematics for Engineering Students", Volume2 and 3(2nd Edition), S.Viswanathan (printers & publishers Pte, Ltd.,) 1992.
2. M.K "Engineering Mathematics" Volumes3-A&B, 13th Edition National Publishing
3. Company, Chennai, 1998.
4. Grewal, B.S.,"Higher Engineering Mathematics" (35thEdition), Khanna Publishers, Delhi2000
5. George B. Thomas and Ross L.Finney. "Calculus and Analytical Geometry" 9th Edn. Narosa
6. Indian Student Edition, New Delhi.
7. Dennis G.Zill and Warren S.Wright. "Advanced Engineering Mathematics". 3rd Edn. Jones & Bartlett Publishers, UK. 1992.
8. www.everyday**math**online.com

Course Description

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

Prerequisites	Co-requisites
Mathematics -I & II	Nil

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

required

Course Outcomes (COs)

COI - 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

COs/SOs	a	b	c	d	e	f	g	h	i	j	k
CO1	H					M				L	
CO2	M		H		H			L	H		M
CO3	M		M	H					M		
CO4	M						M		M	H	
CO5		L	M	H	H				H		
CO6				H	H	H			H		

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 - Tran sforms 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

Statement of Fourier integral theorem - Fourier transform pairs - Fourier Sine and Cosine transforms - Properties - Transforms of simple functions - Convolution theorem - Parseval's identity.