

Course Number and Name	
BMA301 & Mathematics - III	
Credits and Contact Hours	
4 & 75	
Course Coordinator's Name	
Mrs.Subhashini	
Text Books and References	
<p>Text Books:</p> <ol style="list-style-type: none"> 1. Kreyszig, E."Advanced Engineering Mathematics" 8th Edition, John Wiley and Sons, (Asia) Pvt., Ltd, Singapore, 2000.[Units I, II, & V] 2. Monty J.Strauss, Gerald L.Bradley, and Karl L.Smith. "Calculus" 3rdEdn.[Prentice Hall] University Bookstore, New Delhi. [Units III & IV] <p>References:</p> <ol style="list-style-type: none"> 1. Narayanan, S.Manicavachangam Pillay, T.K.Ramanaiah, G."Advanced Mathematics for Engineering Students", Volume2 and 3(2nd Edition), S.Viswanathan (Printers &Publishers Pvt, Ltd.,) 1992. 2. Venkataraman, M.K "Engineering Mathematics" Volumes3-A&B, 13th Edition National Publishing Company, Chennai, 1998. 3. Grewal, B.S., "Higher Engineering Mathematics" (35thEdition), Khanna Publishers, Delhi, 2000. 4. George B. Thomas and Ross L.Finney. "Calculus and Analytical Geometry" 9thEdn. Narosa Indian Student Edition, New Delhi. 5. Dennis G.Zill and Warren S.Wright. "Advanced Engineering Mathematics". 3rdEdn. Jones & Bartlett Publishers, UK. 1992. 	
Course Description	
To equip students with adequate knowledge of Mathematics to formulate problems in Engineering, and solve them analytically	
Prerequisites	Co-requisites
Maths I & II	Nil
required, elective, or selected elective (as per Table 5-1)	
Required	
Course Outcomes (COs)	
<p>CO1: Solve PDE of second and higher order with constant coefficients.</p> <p>CO2: Expand given functions by using the concept of Fourier series.</p> <p>CO3: Solve many of the Engineering models of Heat equations and Wave equations which are PDEs with boundary conditions.</p> <p>CO4: Solve many problems in Automobile, Medicine, and Electronic Engineering which are differential equations of linear or non-linear.</p> <p>CO5: Solve differential equations by Laplace transforms</p>	

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

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

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

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