Course Number and Name	
BMA301 – MATHEMATICS III	
Credits and Contact Hours	
4&75	
Course Coordinator's Name	
Ms J. Aarthy	

Text Books and References

TEXT BOOKS:

1. Kreyszig, E.,"Advanced Engineering Mathematics"8th Edition, John Wiley and Sons, (Asia) Pvt., Ltd, Singapore, 2000.
2. Grewal, B.S.,"Higher Engineering Mathematics" (35thEdition), Khanna Publishers, Delhi2000.

REFERENCES:

1. Kandasamy, P., Thilakavathy, K., and Gunavathy,K. "Engineering Mathematics",Volumes 1 and 3(4th Edition) S Chand and Co., New.
2. Narayanan, S.Manicavachangam Pillai, T.K.Ramanaiah, E.,"Advanced mathematics for Engineering Students", Volume2 and 3(2nd Edition), S.Viswanathan (printers & publishers Pvt, Ltd.,) 1992.
3. Venkataraman, M.K,"Engineering Mathematics"Volumes3-A&B, 13th Edition National Publishing Company, Chennai, 1998.
4. Shanmugam,T.N.:http:.www.annauniv.edu/shan/trans.h

Course Description

To introduce Fourier series analysis which is central to many applications in engineering apart From its use in solving boundary value problems systems.
To acquaint the student with Fourier transform techniques used in wide variety of situations.
To introduce the effective mathematical tools for the solutions of partial differential equations that model several physical processes and to develop Z transform techniques for discrete time

Prerequisites	Co-requisites
Engineering Mathematics I & II	Nil

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

Required

Course Outcomes (COs)

CO1	Solve a set of algebraic equations representing steady state models formed in engineering problems
CO2	Fit smooth curves for the discrete data connected to each other or to use interpolation methods over these data tables
CO3	Find the trend information from discrete data set through numerical differentiation
CO4	To summary information through numerical integration
CO5	Solve PDE models representing spatial and temporal variations in physical systems through numerical method
CO6	Have the necessary proficiency of using MATLAB for obtaining the above solution

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

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