Course Number and Name
BMA 201 - MATHEMATICS – II

Credits and Contact Hours
3 and 60

Course Coordinator's Name
Dr. Deepa

Text Books and References

TEXT BOOK:

1. R.M.Kannan and B.Vijayakumar " Engineering Mathematics – II " 2nd Edition , SRB Publication , Chennai 2007.
2. Bali.N.P and Manish Goyal , " Engineering Mathematics " , 3rd Edition , Laxmi Publications (p) Lltd, 2008 .
3. Grewal .B/S "Higher Engineering Mathematics" , 40th Edition , Khanna Publications , Delhi , 2007 .

REFERENCES:

1. Ramana.B.V , " Higher Engineering Mathematics " , Tata McGraw Hill Publishing Company , New Delhi,2007.
2. Gupta SC, and VK.Kapoor, "Fundamentals Mathematical Statistics", 11th edition, Sultan Chand Sons, , New Delhi, 2014.

Course Description
Explains many mathematical principles and techniques which can be applied in projects and research works in future.

Prerequisites	Co-requisites
Mathematics I	NIL

Required, elective, or Selected elective (as per Table 5-1)
Required

Course Outcomes (COs)	
CO1	Student shall be able to Solve differential equations, simultaneous linear equations, and some special types of linear equations related to engineering.
CO2	Relate the use of mathematics in applications of various fields namely fluid flow, heat flow, solid mechanics, electrostatics, etc.
CO3	Ability to test hypothesis
CO4	Find intensity of degree of relationship between two variables and also bring out regression equations.
CO5	Understand to solve matrix problems related to real life problems.
CO6	Formulate mathematical models

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		L								
CO2		H				H		L	L		M
CO3		H				H		L	L		M
CO4					M						M
CO5										M	M
CO6										M	

List of Topics Covered

UNIT I   Ordinary Differential Equation   12

Higher order linear differential equations with constant coefficients - Method of variation of parameters – Cauchy's and Legendre's linear equations - simultaneous first order linear equations with constant coefficients.

UNIT II   Vector Calculus   12

Gradient, divergence and curl –Directional derivatives – Irrotational and solenoidal vector fields – vector integration– Green's theorem in a plane , Gauss divergence theorem and Stoke's theorem (without proofs) – simple applications involving cubes and rectangular parallelepipeds.

UNIT III   Analytic Functions   12

Functions of a complex variable – Analytic functions – Necessary conditions, Cauchy-Riemann equation and sufficient conditions (without proofs) – Harmonic and orthogonal properties of analytic functions – Harmonic conjugate – construction of analytic functions – conformal mapping : $W = Z+C, CZ$, $1/Z$ and bilinear transformation.

UNIT IV   Complex Integration   12

Complex integration – Statement and application of Cauchy's integral theorem and Cauchy's integral formula – Taylor and Laurent expansions – Singular points – Residues – Residue theorem –Application of Residue theorem to evaluate real integrals – Unit circle and semi-circular contour (excluding ploes on boundaries).

UNIT V   Statistics   12

Mean, Median, Mode – Moments – Skewness and Kurtosis – Correlation – Rank Correlation – Regression –Chi square test for contingency tables.