

Course Number and Name	
BMA201 - MATHEMATICS II	
Credits and Contact Hours	
3 & 60	
Course Coordinator's Name	
Dr.Deepa	
Text Books and References	
TEXT BOOK:	
1. R.M.Kannan and B.Vijayakumar“ Engineering Mathematics–II “2 nd Edition, SRB Publication, Chennai 2007.	
2. Bali.N.P and Manish Goyal , “Engineering Mathematics“, 3 rd Edition, Laxmi Publications (P) Llted, 2008 .	
3. Grewal .B/S “Higher Engineering Mathematics”, 40 th Editon, Khanna Publications, Delhi, 2007	
REFERENCES :	
1. Ramana.B.V, “Higher Engineering Mathematic“, Tata McGraw Hill Publishing Company, New Delhi, 2007.	
2. Gupta SC, and VK.Kapoor, “Fundamentals Mathematical Statistics”, 11 th edition, Sultan Chand Sons, New Delhi, 2014.	
Course Description	
Ability to apply these principles of mathematics in projects and research works.	
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 special types of linear equations related to engineering.
CO2	Relate the use of mathematics in applications of various fields namely fluid flow, heat flow, 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	l
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 proof) – simple applications involving cubes and rectangular parallelepipeds.

UNIT III ANALYTIC FUNCTIONS

12

Functions of a complex variable – Analytic functions – Necessary conditions, Cauchy-Riemann equation 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 poles on boundaries)

UNIT V STATISTICS

12

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