Course Number and Name
BMA101 - MATHEMATICS I
Credits and Contact Hours
3 & 60
Course Coordinator's Name
Dr.Deepa
Text Books and References

TEXT BOOK:

1. Ravish R.Singh and Mukkul Bhatt, "Engineering Mathematics-I" First Reprint, Tata McGraw Hill Co., New Delhi. 2011.
2. 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 D 2007.
2. Glyn James, "Advanced Engineering Mathematics", 7thEdition, Pearson Education, 2007.
3. Erwin Kreyszig, "Advanced Engineering Mathematics", 8th Edition, John Wiley and Sons, New Y 2003.
4. Murray R.Spiegel, "Advanced Calculus", Schaum's Outline Series, First Edn, McGraw Hill Intl B Co.,New Delhi, 1981.

Course Description
To make the students learn Mathematics in order to formulate and solve problems effectively in their respective fields of engineering.

Prerequisites	Co-requisites
+ 2 Level Mathematics	NIL

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

Course Outcomes (COs)	
CO1	Study the fundamentals of mathematics
CO2	Students learn multiple integral techniques
CO3	Students gain knowledge in application of variables
CO4	Find area and volume based on a function with one or more variables.
CO5	Apply matrix operations to solve relevant real life problems in engineering.
CO6	Formulate a mathematical model for three dimensional objects and solve

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											
CO2			M		H							
CO3		H				M						

CO4								L			
CO5							H			L	
CO6											L

List of Topics Covered

UNIT 1   MATRICES   12

Characteristic equations- Eigen values and eigen vectors of the real matrix- Properties- Cayley-Hami
theorem(Excluding proof)- Orthogonal transformation of a symmetric matrix to diagonal form- Quad
form- Reduction of quadratic form to canonical form by orthogonal transformation.

UNIT II   THREE DIMENSIONAL ANALYTICAL GEOMETRY   12

Equation of a Sphere- Plane section of a sphere- Tangent plane- Equation of cone- Right circular c
Equation of a cylinder- Right circular cylinder.

UNIT III   DIFFERENTIAL CALCULUS   12

Curvature in Cartesian coordinates- Centre and radius of curvature- Circle of curvature- Evolutes-Envelo
 Applications of Evolutes and Envelopes.

UNIT 1V   FUNCTIONS OF SEVERAL VARIABLES   12

Partial derivatives- Euler's theorem for homogeneous functions- Total derivatives- Differentiation of imp
functions- Jacobians- Taylor's expansion- Maxima and Minima- Method of Lagrangian multipliers.

UNIT V   MULTIPLE INTEGRALS   12

Double integration- Cartesian and Polar coordinates- Change of order of integration- Change of varia
between Cartesian and Polar coordinates- Triple integration in Cartesian coordinates-Area as double integ
Volume as triple integral.