#### **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 Pub Co., New Delhi. 2011.
- 2. Grewal.B.S, "Higher Engineering Mathematics" , 40<sup>th</sup> Edition, Khanna Publications, Delhi. 2007.

### **REFERENCES**:

- 1. Ramana.B.V. "Higher Engineering Mathematics", Tata McGraw Hill Publishing Company, New Delhi, 2007.
- 2. Glyn James, "Advanced Engineering Mathematics", 7<sup>th</sup> Edition, Pearson Education, 2007.

### **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 N	Mathen	natics			Nil						
required, elective, or selected elective (as per Table 5-1)													
Required													
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	а	b	С	d	е	f	g	h	i	j	k	
	CO1	Н											
	CO2			М		Н							
	CO3		Н				Μ						
	CO4								L				
	CO5							Н			L		
	CO6											L	

Equation of a Sphere- Plane section of a sphere- Tangent plane- Equation	of cone- Right			
circular cone- Equation of a cylinder- Right circular cylinder.				
	10			
UNIT-III Differential Calculus	12			
Curvature in Cartesian coordinates- Centre and radius of curvature- Circl	e of curvature-			
Evolutes- Envelopes- Applications of Evolutes and Envelopes.				
UNIT-1V Functions of Several Variables	12			
Partial derivatives- Euler's theorem for homogeneous functions- To	tal derivatives-			
Differentiation of implicit functions- Jacobians- Taylor's expansion-	Maxima and			
Minima- Method of Lagrangian multipliers.				

#### **UNIT-V Multiple Integrals**

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

#### **List of Topics Covered UNIT-1Matrices**

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

## **UNIT-II Three Dimensional Analytical Geometry**

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