



K. S. INSTITUTE OF TECHNOLOGY

An Autonomous Institution under VTU, Approved by AICTE
Department of Master of Computer Applications
FIRST SEMESTER SYLLABUS

Course: Basic Mathematics (Bridge Course) A bridge course for graduates joined for MCA Programme without study of Mathematics at 10+2 level or at Graduation level	Semester	I	
Course Code	25MMA108	CIE Marks	100
Teaching Hours/Week (L:P:T)	2:0:0	SEE Marks	-
Total Hours of Pedagogy	40	Total Marks	100
Credits	PP	Exam Hours	-
Examination type (SEE)	NA		
Course Objectives (Course Skill Set) The mandatory learning course 25MMA108 viz., Basic Mathematics (Bridge Course) aims to provide basic concepts of Matrices & Determinants, Sequences & Series, Vectors and Differential Calculus.			
Module-1: Matrices and Determinants			
Matrix Introduction, Types of matrices, Scalar multiplication, Addition of matrices, Product of matrices. Transpose of a matrix, Symmetric and Skew Symmetric matrix, Rank of a matrix, Determinant of a matrix. Singular matrix. Number of Hours:8			
Module-2: Sequence and Series			
Introduction, Sequences, Series, Arithmetic Progression, Sum of Finite number of terms in A.P, Arithmetic Means, Geometric Progression, sum to n terms of G.P, Geometric Mean, relation between A.M and G.M. Number of Hours:8			
Module-3: Vector Algebra			
Vector Algebra: Scalar and vectors. Vectors addition and subtraction. Multiplication of vectors(Dot and Cross products). Scalar and vector triple products simple problems Number of Hours:8			
Module-4: Differential Calculus-I			
Differential Calculus: Review of successive differentiation. Formulae for nth derivatives of standard functions- Leibnitz's theorem (without proof). Polar curves –angle between the radius vector and the tangent pedal equation- Problems. Number of Hours:8			
Module-5: Differential Calculus-II			
Maclaurin's series expansions. Partial Differentiation: Euler's theorem for homogeneous functions of two variables. Total derivatives differentiation of composite and implicit function Number of Hours:8			
Course outcome (Course Skill Set) At the end of the course, the student will be able to: CO1: Apply the fundamentals of matrices to solve a given problem CO2: Make use of Sequence and Series to solve a given a problem. CO3: Apply the concepts of vector algebra to solve problems in three-dimensional space. CO4: Solve practical problems by applying differential calculus.			
Suggested Learning Resources: Books 1.B.S. Grewal: Higher Engineering Mathematics, Khanna Publishers, New Delhi, 43rd Ed., 2015.			

1. Kenneth H Rosen, “Discrete Mathematics and its Applications”, McGraw Hill publications, 7th edition.

Web links and Video Lectures (e-Resources):

- <http://ac.in/courses.php?disciplineID=111>
- [http://www.class-central.com/subject/math\(MOOCs\)](http://www.class-central.com/subject/math(MOOCs))
- <http://academicearth.org/>

Teaching-Learning Process (Innovative Delivery Methods)

The following are sample strategies that educators may adopt to enhance the effectiveness of the teaching- learning process and facilitate the achievement of course outcomes.

1. Lectures with PowerPoint presentations, Interactive discussions and problem-solving sessions, Assignments and quizzes for assessment.

Assessment Details (CIE)

The weightage of Continuous Internal Evaluation (CIE) is 100%. The minimum passing mark for the CIE is 40% of the maximum mark (100). A student shall be deemed to have satisfied the academic requirements if the student secures not less than 40% (40 Marks out of 100) in the CIE.

Continuous Internal Evaluation:

1. Three Unit Tests each of 25 Marks (Scale down to 50)
2. Two assignments each of 25 Marks or one Skill Development Activity of 50 marks to attain the COs and POs

The Sum of scaled-down marks scored in the three-unit tests and two assignments is the total CIE marks scored by the student.