

FACULTY OF COMPUTER APPLICATIONS
Bachelor of Computer Applications

- **Sem.** 1
- **Subject Code** : 05BC3101
- **Subject** : Mathematics – 1(BM)
- **Course Objectives** :

1. To enable students to obtain understanding of basic Mathematics concepts which can be applicable in various computer science problems.
2. To enable students to understand concepts of Set Theory, Matrix Algebra and solve simple application problems based on these.
3. To enable students to simplify and evaluate logical statement using different connectives.
4. To enable to model real life situations of relations and functions.

- **Prerequisites:** None

Unit No	Topics Covered	No of lectures required
1	Set Theory Definition of Set, Representation of Set, Types of Set, Venn Diagram of Sets, Operation on Sets (Union, Intersection, Difference, Symmetric Difference, Complement of a set), Algebra of Sets (Without Proof), De Morgan’s Law (Without Proof), Cartesian Product of Sets.	10
2	Propositional Logic Definition, Statement (Proposition) and Notation, Connectives, (Conjunction, Disjunction, Negation, Implication, Bi – implication), Truth Table for all connectives, Statement Formulas, Truth tables,	10

FACULTY OF COMPUTER APPLICATIONS
Bachelor of Computer Applications

	Tautology, Contradiction, Logical Equivalence, Validity of Arguments using truth table.	
3	Matrix Algebra Introduction of Matrix, Types of Matrix, Scalar Multiplication of Matrices, Matrix Operations (Addition, subtraction, Multiplication), Properties of Matrix, Transpose of Matrix, Determinant of Matrix, Minor and Cofactors of a Matrix, Inverse of a matrix, Cramer's rule to solve system of linear equations	10
4	Relation And Function Relation : Introduction Of Relation, Types Of Relation (Reflexive, Irreflexive, Symmetric, Antisymmetric, Transitive), Equivalence Relation, Partial Ordering Set, Graphical and Matrix Representation of a relation Function : Definition of Function, Types of Functions (One – One Function, Onto Function, Bijective Function), Composition of Functions	10

Course Outcomes: At the end of the syllabus students will be able to understand

1. Able to apply concepts of set theory in problem solving.
2. Enhance the students' ability to think logically and mathematically.
3. Able to apply concepts of matrix in real life problem.
4. Able to specify and manipulate basic mathematical objects such as relations and functions and their properties.

CO - PO MAPPING										
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	M		L				L			
CO 2	M		L				M			
CO 3	M		L				H			
CO 4	M		L				M			

FACULTY OF COMPUTER APPLICATIONS
Bachelor of Computer Applications**Text Books:**

1. 'Business Mathematics', V.K.Kapoor and D.C.Sancheti, Sultan Chand & Sons Publications, 11th Edition
2. 'Discrete Mathematical Structures with Application to Computer Science', J.P. Trembly and R. Manohar, Tata McGraw – Hill, 2010

Reference Books :

1. 'Discrete Mathematics and its applications', K.H.Rosen, Tata McGraw – Hill, 6th Edition
2. 'Discrete Mathematical Structure', Bernard Kolmann & others, Pearson Education, 6th Edition
3. 'Discrete Mathematics', D.S.Malik & M.K.Sen, Cengage Learning, 2004

Web References :

1. www.uva.onlinejudge.org
2. www.cse.iitd.ernet.in/~bagchi/courses/discrete-book/fullbook.pdf

App References :

1. Matrix Operations :
https://play.google.com/store/apps/details?id=ru.sssprog.matrixoperations&hl=en_US

Syllabus Coverage from text /reference book & web/app reference:

Unit #	Chapter Numbers
1	Text Book 1 Chapter 2
2	Text Book 2 Chapter 1 (1-1,1-2.1 to 1-2.4,1-2.6 to1-2.13)
3	Text Book 1 Chapter 20
4	Text Book 2 Chapter 2 (2-3.1 to 2-3.3, 2-3.5, 2-3.8, 2-4.1 to 2-4.3)