C. U. Shah University, Wadhwan City

Faculty of Computer Science

Name of Program: Bachelor of Science (Information Technology) (B.Sc.IT)

Semester : I

W.e.f. June – 2016

Teaching & Evaluation Scheme

Sr. No	Subject Code	Subject Name	Teaching Hours/Week				Credits	Evaluation Scheme/Semester							
								Theory				Practical			Total Marks
								Sessional Exam		University Exam		Internal		Uni.	
			Th	Tu	Pr	Total		Marks	Hrs	Marks	Hrs	Pr	TW	Pr	
2	4CS01IFM2	Mathematical Concepts for Computer Science	4	-	-	4	4	30	1.5	70	3	-	-	-	100

Objectives: This course provides the foundational introduction to the fundamental concepts in Mathematics for computer science.

Pre-requisites: A basic understanding of Mathematical Operations.

Course Outline:

Ch. No	Chapter Name	Course Contents	Lect. Hours
1.	Set	1.1 Definition 1.2 Methods of representing sets 1.3 Different notations in sets 1.4 Standard sets of numbers 1.5 types of sets 1.5.1 Empty set 1.5.2 Singleton set 1.5.3 Finite set 1.5.4 Infinite set 1.5.5 Equivalent Sets 1.5.6 Equal sets 1.5.7 Disjoint sets 1.5.8 Overlapping sets 1.5.9 Subset 1.5.10 Superset 1.5.11 Proper subset 1.5.12 Power set 1.5.13 Universal set 1.6 Venn diagrams 1.7 Operations on sets 1.7.1Union of sets 1.7.2intersection of sets 1.7.3difference of sets 1.8 Distributive law of union over intersection 1.9 Distributive law of intersection over union	10

		1.10 Complement of a set 1.11 Cardinal number of sets 1.12 Cardinal properties of sets 1.13 De Morgan's law for intersection 1.14 Cartesian product of two sets	
2.	**Relation**	2.1 Definition 2.2 Properties of relation 2.3 Domain and range 2.4 Representation of relations using graph 2.5 Types of relation 2.5.1 Reflexive Relation: 2.5.2 Symmetric Relation 2.5.3 Anti-Symmetric Relation 2.5.4 Transitive Relation 2.5.5 Equivalence Relation 2.6 Combining relations 2.7 Composition of Relations	4
3.	**Function**	3.1 Definition 3.2 Domain 3.3 Co-domain and range of a function 3.4 Types of functions 3.4.1 Even Function 3.4.2 Odd Function 3.4.3 Monotonic Function 3.4.4 Surjective Function 3.4.5 Bijective Function 3.4.6 Injective Function 3.5 Equal functions 3.6 Real functions 3.7 different functions and their graphs	6
4.	**Determinant and Matrix**	4.1 Definition of determinant 4.2 properties of determinant 4.3 Definition of matrix 4.4 Types of matrices 4.4.1 row matrix 4.4.2 column matrix 4.4.3 null matrix 4.4.4 square matrix 4.4.5 diagonal matrix 4.4.6 scalar matrix 4.4.7 identity matrix 4.4.8 Upper triangular matrix 4.4.9 Lower triangular matrix 4.4.10 Symmetric matrix 4.4.11 Skew symmetric matrix 4.4.12 Idempotent matrix 4.4.13 Nilpotent matrix 4.4.14 Orthogonal matrix 4.5 Trace of the matrix 4.6 transpose of matrix	10

		4.7 Addition of matrix 4.8 Subtraction of matrix 4.9 Scalar multiplication of matrix 4.10 Matrix multiplication 4.11 Determinant of a square matrix 4.12 Adjoint of a matrix 4.13 Inverse of matrix	
5.	**Co-ordinate geometry**	5.1 Introduction 5.2 Distance between two points 5.3 Section formula 5.4 Area of triangle 5.5 Collinearity of three points 5.6 Equation of straight lines 5.7 Slope of a straight line 5.8 Intercepts of a line on the axes 5.9 Standard forms of equations of straight lines 5.10 Angle between two points	12
6.	**Limit and continuity**	6.1 Introduction to limit 6.2 Meaning of x ->a 6.3 Meaning of x->0 6.4 Meaning of x->∞ 6.5 Limit of a function 6.6 Limit of a function by preparing tables 6.7 Rules of limit 6.8 Some standard limits 6.9 Notations for finite series 6.10 Introduction to continuity 6.11 Definition of continuity 6.12 Examples	13
		TOTAL	**55**

Reference Books:

1. **"**BCA Advanced Mathematics", H.R. Vyas, B.S. Shah Publication (3rd Edition-2007)
2. "Fundamental of Mathematical Analysis", G Das & S Pattanayak, Tata McGraw-Hill publishing company Ltd.
3. "Mathematical & statistical foundation of computer science",CJamnadas& Co(New Edition-2013).
4. "Polytechnic Mathematics" , S. P Deshpande , Pune VidyarthiGruhPrakashan, 1984
5. "Advanced Mathematics",RaviGor,NiravPublication(4th Edition-2006)