Syllabus for Bachelor of Vocation (B. Voc), 2ⁿᵈ Semester
Branch: Software Development
Subject Name: Basic Mathematics
Subject Code: 21120204

Type of course: Basic Science Course

Prerequisite: Mathematics Fundamentals

Rationale: The study of Set, Relation, Function, Matrices, Vector, Linear Algebra and Boolean Algebra.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory		Practical		
L	T	P	C	University exams (ESE)	Internal evaluation (PA)	External Practical /viva Exam(ESE)	Internal Practical /viva Exam(PA)	
3	-	-	3	50	-	-	-	50

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment

Contents:

Sr. No.	Practical / Hands on Exercise	Hrs.
1.	**Set, Function and Relation** Introduction, Set - Representation, Operation and its properties, Venn Diagram, Cartesian Product, Function – Definition, Domain, Range, Construction and functions, Relations, Trigonometric Functions	08
2.	**Algebra** Complex Numbers, Quadratic Equation and linear inequalities, Permutations and Combinations	06
3.	**Vector and Matrices** Vector, Dot Product, Scalar multiplication, Determinants, Straight line, Matrices of order M*N, Row and Column transformation, Matrices operation – Addition, Subtraction, Multiplication, Inverse, Transpose	09
4.	**Statistics and Probability** Measures of Dispersion, Random Experiments and Events, Probability	05
5.	**Boolean Algebra** Definition & Examples of Boolean Algebra, De-Morgan's Law, Truth Tables, Boolean Functions, Representation and minimization of Boolean Functions, Design example using Boolean algebra	08
6.	**Basics of Graph Theory** Definition of Graph, degree of vertex Multigraph, Subgraph, Connected Components, Cut points and Bridges, Complete Graph, Regular Graph, Bipartite Graph	06

Reference Books:

1. Applied Mathematics-I, J. K. Tyagi, Khanna Publishing House.
2. Engineering Mathematics, Reena Garg, Khanna Publishing House.
3. Applied Mathematics-II, J. K. Tyagi, Khanna Publishing House.
4. Elements of Mathematical Analysis, R. Agor, Khanna Publishing House.
5. Fundamentals of Digital Electronics, Aditya Chaturvedi, Khanna Publishing House.

GUJARAT TECHNOLOGICAL UNIVERSITY

Syllabus for Bachelor of Vocation (B. Voc), 2nd Semester
Branch: Software Development
Subject Name: Basic Mathematics
Subject Code: 21120204

With effective from academic year 2021-22

Course Outcomes:

CO1: Use the concepts of discrete mathematics in computer science.
CO2: To perform matrix computation in a comprehensive manner and understand vector and algebra.
CO3: Understand the basic probability and statistics.
CO4: To understand fundamentals of Boolean algebra.