



# GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Bachelor of Vocation

Level: Under Graduate

Branch: Food Processing and Quality Control

Subject Code: BV02009021

Subject Name: Mathematics

w. e. f. Academic Year:	2024-25
Semester:	2
Category of the Course:	Core Courses

<b>Prerequisite:</b>	Mathematics Fundamentals
<b>Rationale:</b>	The study of Set, Relation, Function, Matrices, Vector, Linear Algebra and Boolean Algebra.

## Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes
01	Use the concepts of discrete mathematics in computer science.
02	To perform matrix computation in a comprehensive manner and understand vector and algebra.
03	Understand the basic probability and statistics.
04	To understand fundamentals of Boolean algebra.

## Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
L	T	PR	C	Theory		Tutorial / Practical		
				ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
3	0	0	3	50	0	0	0	50

## Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	<b>Set, Function and Relation</b> Introduction, Set - Representation, Operation and its properties, Venn Diagram, Cartesian Product, Function – Definition, Domain, Range, Construction and functions, Relations,	9	18



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	Trigonometric Functions		
2.	<b>Algebra</b> Complex Numbers, Quadratic Equation and linear inequalities, Permutations and Combinations	6	17
3.	<b>Vector and Matrices</b> Vector, Dot Product, Scalar multiplication, Determinants, Straight line, Matrices of order M*N, Row and Column transformation, Matrices operation – Addition, Subtraction, Multiplication, Inverse, Transpose	10	20
4.	<b>Statistics and Probability</b> Measures of Dispersion, Random Experiments and Events, Probability	5	10
5.	<b>Boolean Algebra</b> Definition & Examples of Boolean Algebra, De-Morgan's Law, Truth Tables, Boolean Functions, Representation and minimization of Boolean Functions, Design example using Boolean algebra	9	20
6.	<b>Basics of Graph Theory</b> Definition of Graph, degree of vertex Multigraph, Subgraph, Connected Components, Cut points and Bridges, Complete Graph, Regular Graph, Bipartite Graph	6	15
	<b>Total</b>	<b>45</b>	<b>100</b>

## References/Suggested Learning Resources:

### (a) 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.

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