GUJARAT TECHNOLOGICAL UNIVERSITY

Syllabus for Bachelor of Vocation (B.Voc.), 1st Semester
Branch: Solar & Renewable Energy
Subject Name: Basic Mathematics
Subject Code: 1110701

Type of course: Basic Science Course

Prerequisite: Mathematics Fundamentals

Rationale: The study of Complex number, Matrices, Vector, Linear Algebra and Boolean algebra, Differentiation, Integration, First order differential equation.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory Marks		Practical		
L	T	P	C	ESE (E)	PA(M)	ESE (V)	PA (I)	
3	0	0	3	50	0	0	0	50

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

Contents:

Sr. No.	Content	Hrs.	Module % Weightage
1.	**Complex Number** Basic Properties of Complex Numbers, Algebra of Complex Number, Modulus, Argument, Quadratic Equation	6	10
2	**Vector and Matrices** Vector, Dot Product, Scalar Multiplication, Determinants, Matrices of order M*N, Row and Column transformation, Matrices operation – Addition, Subtraction, Multiplication, Inverse, Transpose, Solving system of linear equations	10	25
3.	**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	10	25
4.	**Basic Differentiation & Basic Integration** Basic Differentiation Formulae, $u \cdot v$ Rule, u/v Rule, Chain Rule Basic Integration Formulae, Properties of Definite Integrals	9	20
5.	**First Order ODE:** Order and Degree, Formation of a differential equations, Method of solving First order ordinary differential equations: Separable variable, linear equations	9	20
	Total	42	100

Reference Books:

1. Engineering Mathematics, Reena Garg, Khanna Publishing House.
2. Elements of Mathematical Analysis, R. Agor, Khanna Publishing House.
3. Fundamentals of Digital Electronics, Aditya Chaturvedi, Khanna Publishing House.
4. Polytechnic Mathematics, S Chand, 1985.
5. R. D. Sharma, class 11 and 12, Basic text Books.
6. Tata McGraw Hill (TMH), Mathematics.

Course Outcomes:

Sr. No.	CO Statement
CO-1	Use the concepts of Complex Numbers
CO-2	To perform matrix computation in a comprehensive manner and understand vector and algebra.
CO-3	To understand fundamentals of Boolean algebra.
CO-4	Understand the basic Differentiation & Basic Integration
CO-5	To apply effective mathematical tools for the solutions of first order ordinary differential equations.