



GUJARAT TECHNOLOGICAL UNIVERSITY
Syllabus for Bachelor of Vocation (B.Voc.), 2nd Semester
Branch: Solar & Renewable Energy
Subject Name: Fundamental of Digital Electronics Lab
Subject Code: 1120705

Type of course: Core

Prerequisite: None

Rationale: In the field of Electronics, it is essential to use/maintain various types of equipment which are electronically operated and controlled. For using/maintaining such equipment, the fundamental principles of electronics are to be applied in many situations to arrive at the probable solutions to many of the broadly defined problems which they will face during their career. Therefore, the knowledge about the functions of various basic electronics devices and the associated circuits including the associated practical skills acquired through the laboratory will help the student. This course is therefore so designed that the students will be able to apply the principles of digital electronics when required.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical		
			ESE (E)	PA(M)	ESE (V)	PA (I)		
0	0	4	2	0	0	30	20	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	Teaching Hrs.
1	Convert Number system to another. (Binary, Decimal, Octal, Hexadecimal)	2
2	To study different types of Logic Gates & verify the Truth-Table for the same. (AND, OR, NOT, NAND, NOR, EX-OR & EX-NOR)	2
3	To verify the statements of De-Morgan's Theorem.	2
4	To verify NAND gate as Universal Gate	2
5	To verify NOR gate as Universal Gate	2
6	To verify the given Boolean Expression experimentally by using Basic Logic Gates. $A.B + A'.C = (A + C) . (A' + B)$	2
7	To Design and implement Half-Adder & Full-Adder.	4
8	To Design and implement Half Subtractor & Full Subtractor.	4
9	To Perform 3 To 8 Line Decoder.	4



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10	To study different types of Flip-Flops.	4
	Total	28

Course Outcome:

Sr. No.	CO Statement	Marks % Weightage
CO-1	Solve the given problem using fundamentals of Number systems.	10
CO-2	Apply Boolean algebra for circuit optimization.	50
CO-3	Elaborate various types of Combinational circuits.	30
CO-4	Recognize Flip-flops as Sequential circuits.	10

Major Equipment:

1. Digital Electronics Trainer kit.
2. Complete Bread Board Systems, switches and I/O indicators, millimeters.
3. Digital Storage Oscilloscopes.

List of Open Source Software/learning website:

1. www.vlab.co.in
2. www.nptel.ac.in