Subject Title	B] Digital Electronics		
Subject Ref. No.	BCA307T (B)	No. of Credits	2
		No. of Periods / Week	30 /2
		Assignments / Sessional	20
		Semester Examination	30

Course Objectives

At the end of the course, students will be able to:

1	To provide the fundamental concepts associated with the digital logic and circuit desig
2	To introduce the basic concepts and laws involved in the Boolean algebra and families and digital circuits
3	To familiarize with the different number systems, logic gates, and combinational and sequential circuits utilized in the different digital circuits and systems.

Course Outcomes (COs)

At the end of the course, students will be able to:

CO-1	Examine the structure of number systems and perform the conversion among diff number systems
CO-2	Became familiar with the digital signal, positive and negative logic, Boolean algebra, gates, logical variables, the truth table,
CO-3	Illustrate reduction of logical expressions using Boolean algebra, k-map and tabul method and implement the functions using logic gates

Pre Requisite	There is no prerequisites for attending this course	No of Lecture
Unit – I	**Number Systems** Analogue versus Digital ,Number Systems , Decimal Number System, Binary Number System, Octal Number System, Hexadecimal Number System, 1's Complement & 2's Complement subtraction, Conversion Binary - Decimal, Octal-Decimal, Hexadecimal-Decimal, Decimal-Binary, Decimal-Octal, Decimal-Hexadecimal, Binary - Octal, Octal - Binary, Hex - Binary, Binary - Hex, Hex - Octal and Octal - Hex. **Binary Codes & Digital Arithmetic** Binary Coded Decimal (BCD), , ASCII code, Basic Rules of Binary Addition	10

		and Subtraction, Binary Addition, Multiplication, Subtraction Using 1's & 2's Complement,	
Unit – II		**Logic Gates & Boolean Algebra** Positive and Negative, Truth Table, Logic Gates, OR Gate, AND Gate, NOT Gate, EX-OR Gate, NAND Gate, NOR Gate, EX-NOR Gate, Universal Gates. Introduction to Boolean Algebra, Postulates of Boolean Algebra, Theorems of Boolean Algebra,	10
		Simplification Techniques Sum-of-Products Boolean Expressions, Product-of-Sums Expressions, $\sum$ and Pi Nomenclature, Karnaugh Map Method, Construction of a Karnaugh Map, K Map for 2, 3 & 4 variables, rolling & Overlapping, Don't care condition	
Unit – III		**Arithmetic Circuits** Combinational Circuits, Implementing Combinational Logic, Arithmetic Circuits Basic Building Blocks, Half-Adder, Full Adder,Half-Subtractor,Full Subtractor. **Flip-Flops** Flip-Flop, Clocked R-S Flip-Flop, J-K Flip-Flop, J-K Flip-Flop with PRESET and CLEAR Inputs, Toggle Flip-Flop, D Flip-Flop.	10
Text Books		1) Digital Electronics Principles, Devices and Applications By Anil K. Maini , John Wiley & Sons, Ltd 2) Digital Electronics & Micro- Computer R.K Gaur Dhanpat Rai Publication 3) Modern Digital Electronics By R.P Jain MC Graw Hill Publication	
Additional Reference Books		Digital Fundamentals by Thomas L. Floyd , Pearson Education Limited	