DIGITAL LOGIC & COMPUTER ORGANIZATION

Course Code	23ES1304	Year	II	Semester	I
Course Category	Engineering Science	Branch	CSE/IT	Course Type	PC
Credits	3	L – T – P	3-0-0	Prerequisites	Engineering Mathematics, BEEE
Continuous Evaluation:	30	Semester End Evaluation:	70	Total Marks:	100

Course Outcomes		
Upon successful completion of the course, the student will be able to:		
CO1	Understand the basics of digital circuits, computer system components and organization, computer arithmetic, and memory organization.	L2
CO2	Apply the basic concepts of I/O organization and Processor Organization	L3
CO3	Apply the minimization techniques to simplify Boolean expressions	L3
CO4	Analyze the functionality of combinational circuits and sequential circuits.	L4

Syllabus		
Unit No.	CONTENTS	Mapped CO
I	**Data Representation:** Binary Numbers, Number base conversions, Octal and Hexadecimal Numbers, complements of Numbers, Signed binary numbers, Binary codes, Basic Gates **Digital Logic Circuits-I:** Basic Theorems and Properties of Boolean Algebra, Boolean Functions, Canonical and Standard forms**,** The Map Method, Four-Variable K-map, Product of Sums simplification, Don‟t Care Conditions	CO1,CO3
II	**Digital Logic Circuits-II**: Combinational Circuits, Analysis of Combinational circuits, Binary Adder – Subtractor, Decoders, Encoders, Multiplexers **Sequential Circuits** – Latches, Flip-Flops, Shift Registers, Ripple counters, Synchronous Counters	CO1,CO4
III	**Processor Organization:** General Register Organization, Stack Organization, Instruction Formats and Addressing Modes **Computer Arithmetic:** Addition and Subtraction, Multiplication Algorithms, Decimal Arithmetic Unit, Decimal Arithmetic Operations	CO1,CO2
IV	**The Memory Organization:** Memory Hierarchy, Main Memory, Auxiliary Memory, Associative Memory, Cache Memory and Virtual Memory	CO1
V	**Input/output Organization:** Peripheral Devices, Input Output Interface, Asynchronous Data Transfer, Modes of Transfer, Priority Interrupt, DMA	CO2
Learning Resources		

Text Books
1. Digital Design, 6th Edition, M. Morris Mano, Pearson Education.
2. Computer Systems Architecture, M.Moris Mano, Revised 3rdEdition, Pearson
3. Computer Organization, Carl Hamacher, ZvonkoVranesic, SafwatZaky, 6th edition, McGraw Hill

Reference Books
1. Computer Organization and Design, David A. Paterson, John L.Hennessy, Elsevier
2. Fundamentals of Logic Design, Roth, 5thEdition, Thomson
3. Computer Organization and Architecture, William Stallings, 11thEdition, Pearson.

E-Resources & other digital material
1. https://nptel.ac.in/courses/117105080
2. https://archive.nptel.ac.in/courses/106/105/106105163/
3. https://nptel.ac.in/courses/106/103/106103068/