

**AIM**

Learn how to design digital circuits, by simplifying the Boolean functions. Also, gives an idea about designs using PLDs, and writing codes for designing larger digital systems.

**UNIT I BOOLEAN ALGEBRA AND LOGIC GATES****9**

Review of Binary Number Systems – Arithmetic Operations – Binary Codes – Boolean Algebra and Theorems - Boolean Functions – Simplifications of Boolean Functions using Karnaugh Map and Tabulation Methods – Logic gates – NAND and NOR implementations

**UNIT II COMBINATIONAL LOGIC****9**

Combinational Circuits – Analysis and Design Procedures - Circuits for Arithmetic Operations - Code Conversion – Decoders and Encoders – Multiplexers and Demultiplexers - Introduction to HDL – HDL Models of Combinational circuits

**UNIT III SYNCHRONOUS SEQUENTIAL LOGIC****9**

Sequential circuits – Latches and Flip Flops – Analysis and Design Procedures - State Reduction and State Assignment - Shift Registers – Counters – HDL for Sequential Logic Circuits.

**UNIT IV ASYNCHRONOUS SEQUENTIAL LOGIC****9**

Analysis and Design of Asynchronous Sequential Circuits - Reduction of State and Flow Tables – Race-free State Assignment – Hazards.

**UNIT V MEMORY AND PROGRAMMABLE LOGIC****9**

RAM and ROM – Memory Decoding – Error Detection and Correction – Programmable Logic Array – Programmable Array Logic – Sequential Programmable Devices – Application Specific Integrated Circuits.

**TUTORIAL: 0****TOTAL: 45****TEXT BOOKS**

1. M.Morris Mano and Michael D. Ciletti, "Digital Design", IV Edition, Pearson Education, 2008.

**REFERENCES**

1. John F. Wakerly, "Digital Design Principles and Practices", Fourth Edition, Pearson Education, 2007.
2. Charles H. Roth Jr, "Fundamentals of Logic Design", Fifth Edition – Jaico Publishing House, Mumbai, 2003.
3. Donald D. Givone, "Digital Principles and Design", Tata Mcgraw Hill, 2003.
4. Kharate G. K., "Digital Electronics", Oxford University Press, 2010.