

CO1	H	M	L	L	-	-	-	-	-	-	-	M	M	-
CO2	H	M	L	L	-	-	-	-	-	-	-	M	L	-
CO3	M	H	M	M	H	-	-	L	M	-	M	M	L	M
CO4	H	M	M	L	-	-	-	-	-	-	M	L	M	-
CO5	L	L	M	L	L	L	L	L	M	M	L	-	-	L

g) Course Content

UNIT I DIGITAL FUNDAMENTALS AND COMBINATIONAL CIRCUITS 10

Introduction to Boolean algebra and Switching Functions; Boolean Minimization using K Map and Tabulation method; combinational circuits: Design procedure – Half adder – Full Adder – Half subtractor – Full subtractor – Parallel binary adder, parallel binary Subtractor – Fast Adder - Carry Look Ahead adder – Serial Adder/Subtractor - BCD adder – Binary Multiplier – Binary Divider - Multiplexer/ Demultiplexer – decoder - encoder – parity checker – parity generators – code converters - Magnitude Comparator

UNIT II SEQUENTIAL CIRCUITS 10

Flip Flops and Memory devices: RAM – Static and Dynamic, ROM, PROM, EPROM, EEPROM; Counters and Shift registers: Binary, BCD and programmable modulo counters, Shift register counters; Sequential circuit design: using Mealy and Moore model.

UNIT III INTRODUCTION TO HARDWARE DESCRIPTION LANGUAGE 10

Introduction to Verilog / VHDL- Structural, Dataflow and Behavioral modeling. Structural, Dataflow and Behavioral modeling of combinational logic circuits (Multiplexer, Demultiplexer, decoder and encoder). Structural, Dataflow and Behavioral modeling of sequential logic circuits (counters and shift registers).

UNIT IV ASYNCHRONOUS SEQUENTIAL CIRCUITS 10

Analysis Procedure, Circuits with latches; Design Procedure, Reduction of state and flow table; Race free state assignment; Hazards; ASM chart; Design examples

UNIT V APPLICATIONS OF DIGITAL ELECTRONICS 5

Multiplexing displays - Frequency counters - Time measurements - using the ADC0804 - Slope alone operation, span adjust, zero shift, testing - microprocessor compatible A/D converters.

Total 45 Hrs

h) Learning Resources

Reference Books

1. John F.Wakerly, Digital Design, Fourth Edition, Pearson/PHI, 2006
2. Thomas L. Floyd, Digital Fundamentals, 8th Edition, Pearson Education Inc, New Delhi, 2003

Donald D.Givone, Digital Principles and Design, TMH

3. William H. Gothmann, Digital Electronics, 2nd Edition, PHI, 1982.

Text Books

1. M. Morris Mano, Digital Design, 3rd Edition, Prentice Hall of India Pvt. Ltd., 2003 Pearson Education (Singapore) Pvt. Ltd., New Delhi, 2003
2. Donald .P.Leach, Digital principles and applications, 7th Edition, McGraw-Hill, 2012

Online Resources

1. <http://www.wiley.com/legacy/wileychi/mblin/supp/student/LN08CombinationalLogicModules.pdf>
2. <http://www.learnabout-electronics.org>
3. www.nptel.com/digitalelectronics/iitkanpur/
4. www.mooc.org