DELHI TECHNOLOGICAL UNIVERSITY

DEPARTMENT OF SOFTWARE ENGINEERING

B.TECH. 2nd YEAR SYLLABUS

Course Title	Course Structure			Pre-Requisite
EC252 Digital Systems & Design	L	T	P	Concepts of Boolean Algebra, basic Logic gates
	3	0	2	

Course Objective:
To introduce the concepts of digital logic, functioning and design of digital devices, Programmable Devices, memory, and digital system design using VHDL.

Course Outcome (CO):
1. Apply knowledge of minimization techniques to switching functions, and realization of FSM.
2. Apply synchronous sequential logic concept for designing Finite state machines.
3. Apply Asynchronous sequential logic concepts for designing circuits from given statements and apply ASM concepts for designing digital circuits.
4. Understand the concept of various ADC and DAC conversion and various techniques and designing circuits using programmable logic devices.
5. Understand the concept of HDL and demonstrate its knowledge by designing various digital systems.
6. Understand the concept of various logic families and their parameters.

S.No.	Content	Contact Hours
Unit 1	Review of basic concepts of switching functions, and minimization techniques (Karnaugh's Map Method & Tabulation Techniques). Introduction to finite state machine: pulse and fundamental mode of operation, realization of state table from verbal description, state diagram & Transition matrix, Mealy and Moore model machine.	8
Unit 2	Design of sequential circuits: Flip Flops, Shift Registers, Ring counters, Up-Down counters, Asynchronous counters, decade counters.	8
Unit 3	Introduction to design asynchronous sequential circuit flow table realization from verbal description, ASM charts.	8
Unit 4	Concept of Digital to Analog Conversion Ladder Networks, and Concept of Analog to Digital conversion: Dual Slope method, stair case Ramp-method/counter method successive approximation	8

	type of A/D converters etc. Introduction to design with the programmable modules: ROM, PAL, PLA, FPGA .	
Unit 5	Introduction to HDL (VHDL), Behavioral Modeling, Dataflow Modeling, Structural Modeling, and Application in Digital System Designs.	6
Unit 6	Introduction Logic Gates Families TTL, Tristate Logic, ECL, CMOS and I^2L Logic, Logic parameters, Bistable, Monostable, Astable and Schmitt trigger circuit	4
	Total	42

Books:-

S.No.	Name of Books/Authors/Publisher
1.	Thomas L. Floyd, Digital Fundamentals, 10thEdition, Pearson Education, ISBN-13: 9780132359238, 2009.
2.	M. Morris Mano, Digital Design, 4th Edition, Pearson EducationISBN-13: 9780131989245,2007.
3.	Donald P.Leach and Albert Paul Malvino, GoutamSaha, Digital Principles and Applications, 6th Edition, TMH, ISBN: 0070601755, 2006.
4.	John F.Wakerly, Digital Design: principles and practices, 4th Edition, Pearson Education, ISBN-10: 0131863894, 2006.
5.	John.M Yarbrough, Digital Logic Applications and Design, Thomson Learning, ISBN-10: 0314066756, 2002.
6.	Switching And Finite Automata Theory by Z. Kohavi (TMH). 2010
7.	VHDL Primer by J. Bhaskar; BS Publication. 2001