

Year & Sem:	Course Code: EC4502	Course Name: Digital VLSI Design	No. of Credits: 4	L 2	T&PS 2	P 0
UNIT-I: Introduction to Digital VLSI Design: Evolution of VLSI Systems, Applications of VLSI Systems , Review of Digital Design Algorithmic State Machines: Components of ASM Chart, ASM for Binary Multiplier, ASM for weighing machine , ASM for Bus Arbiter, Arithmetic Mean, Sort operation UNIT – II : Design of Memories : On-Chip dual address ROM Design and Verilog implementation, Single Address ROM Design and Verilog implementation, On-Chip Dual RAM Design. Unit- III: Design of Arithmetic Circuits: Principle of pipelining, partitioning of a design, serial signed adder design, parallel signed adder design , parallel and pipelined multiplier design and Verilog implementations Unit – IV: Design of a Discrete Cosine Transform and Quantization Processor : DCTQ processor block diagram, Signal description of DCTQ processor , Architecture of DCTQ processor, Verilog code for DCTQ Datapath and Control path, verification of DCTQ processor UNIT-V: RT Level Design and Test : Sequential Multiplier – shift and add multiplication process, sequential multiplier design , multiplier testing, Von Neumann Computer Model-processor model specification, designing the adding CPU, design of datapath and control path, testing adding CPU, CPU Design and Test- details of processor functionality, SAYEH Datapath and control path design and realization. UNIT – VI: Hardware Implementations Using FPGA and I/O Boards: FPGA board features, features of Digital Input/output board, Traffic light controller design and implementation on FPGA, Real Time clock design and implementation on FPGA, Projects for implementation on FPGA. References/Text Books: 1. Digital VLSI Systems Design – S.Ramachandran , Springer Publications 2. Verilog Digital System Design – Zainalabedin Navabi Lecture Plan: Unit-I & -II syllabus for MID-I, Unit-III & -IV syllabus for MID-II and Unit-V & -VI syllabus for MID-III examinations. Video Lectures (Web Links): 1. http://nptel.ac.in/courses/117106092 2. Study Materials (Web Links): 1. 2.						