Year & Sem: E2S1	Course Code: EC2103	Course Name: **VLSI**	No. of Credits: 4	L	T&PS	P
				2	2	0

UNIT –I: Introduction Overview of VLSI Design flow, ASIC Design flow, FPGA Design flow, Introduction to State Machines, Mealy machines, Moore machines, Finite state machines

UNIT-II: Digital Design using Verilog HDL Datapath Design, Control Path Design, Digital Design using Verilog HDL – Gate level modelling , Dataflow modelling and Behavioral modelling , Verilog Test Bench

UNIT –III: Fabrication Fabrication process flow: cleaning, oxidation, patterning, Mask Alignment, Lithography-types, etching-types, annealing, different photo-resists
UNIT- IV: Characterization Mechanical, Optical and Electrical, Interface electronics, wafer bonding, Metallization

UNIT -V: MOS and BiCMOS circuit design processes MOS Layers, Stick Diagrams, Design Rules and Layout, General Observations on the Design rules, Layout diagrams

UNIT -VI: MOS Inverter circuits Voltage transfer characteristics of inverter, Noise margin definitions, Resistive-Load Inverter Design, MOS Transistors as Load Devices, CMOS Inverters, Pseudo-NMOS Inverters

References/Text Books:
1.Fundamentals of Digital Design using Verilog by Zvoko Vranesic
2.Verilog HDL - A Guide to Digital Design and Synthesis- by Samir Palnitkar ,SunSoft Press, 1996.
3. Basic VLSI Design by Douglas A.Pucknell and Kamran Eshraghian
4. Microsystem Design by Stephen D. Senturia, Kluwer Academic Publishers
5.Fundamentals of Microfabrication by Marc Madou, CRC Press
6.Digital Systems Design with FPGAs and CPLDs by-Ian Grout-Elsevier-2008

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/117106114/
2. http://nptel.ac.in/courses/117105082/
3. http://nptel.ac.in/courses/106106088
4. http://www.asic-world.com

Study Materials (Web Links):
1.
2.

Problems & Solutions (Web Links):
1.