

IV B.Tech I Semester

15AEC60 - DSP & VLSI LABORATORY

L T P C

0032

Note: The students are required to perform any Six Experiments from each Part of the following.

Part-A: DSP Lab**Course Objectives:**

1. To design real time DSP systems and real world applications.
2. To Implement DSP Algorithms using both fixed and floating point processors
3. To generate the basic functions of different transforms
- 4.

List of Experiments:

1. Generating, plotting and finding the power and energy a given signal.
2. Convolution and correlation (auto and cross) of discrete sequences without using built in functions.
3. DTFT of a given signal
4. N-Point FFT algorithm
5. Design of FIR filter using window technique and verifying the frequency response of the filter
6. Design of IIR filter using any of the available methods and verifying the frequency response of the filter

Course Outcomes: After completion of the course, the student is able to

- a. Design real time DSP Systems for real world applications.
- b. Implement DSP Algorithms using both fixed and floating point processors

Part-B: VLSI Lab

Course Objectives: Student will be able to

1. Understand the layout design rules.
2. Learn implementation of Layout, Physical Verification and place & route for complex designs.
3. Learn the layout of any combinational circuit.
4. Verify the Layouts of DRC and LVS.

List of Experiments:

Note: Any 4 of the above experiments are to be conducted. Exp.1 & 2 is mandatory.

1. Introduction to layout design rules
2. Layout, physical verification, placement & route for complex design, static timing analysis, IR drop analysis and crosstalk analysis of the following:
 - Basic logic gates
 - CMOS inverter
 - CMOS NOR/NAND gates
 - CMOS XOR MUX gates
 - CMOS 1-bit full adder

- Static/Dynamic logic circuit(register cell)
 - Latch
 - Pass transistor
3. Layout of any combinational circuit (complex CMOS logic gate) – learning about data paths
 4. Introduction of Simulation and coding of NMOS/CMOS circuit
 5. Simulation of basic analog circuits: Inverter/Differential amplifier
 6. Analog Circuit simulation (AC analysis) – CS & CD amplifier

Course Outcomes: Upon completion of the course, students will be able to:

- a. Gain knowledge in Design of logic designs
- b. Know to write HDL codes for all digital designs and implement using simulation tools.
- c. Know obtaining static timing analysis, IR drop analysis and crosstalk analysis of combinational and sequential circuits.
- d. Know the simulation of basic analog circuits.

