

19AEC67- DIGITAL SIGNAL PROCESSING LAB

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**Course Objectives:** The objectives of the course are to make the students learn about

- To simulate basic signal processing operations like convolution and correlation.
- To simulate DSP operations like DFT and FFT.
- To design and implement IIR and FIR filters using simulation software and verify their frequency responses.

**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 Decimation in timeFFT algorithm.
5. N-Point Decimation in frequency FFT algorithm.
6. Find the frequency response of analog Butterworth prototype filters (LP/HP/BP/BR).
7. Find the frequency response of analog chebyshev prototype filters (LP/HP/BP/BR).
8. Implement IIR Butterworth filter (LP/HP/BP/BR) using bilinear transformation techniques.
9. Implement IIR Chebyshev filter (LP/HP/BP/BR) using impulse-invariance transformation techniques.
10. Design of FIR filter using window technique and verifying the frequency response of the filter
11. Design of IIR filter using any of the available methods and verifying the frequency response of the filter
12. Design of FIR filters using frequency sampling method.
13. Generating, plotting and finding the power and energy a given signal.

**Course Outcomes:**

At the end of this Course the student will be able to

- Simulate and analyze basic signal processing operations like convolution and correlation.(L4) **L4**
- Simulate and analyze DSP operations like DFT and FFT.(L4) **L4**
- Design and implement IIR and FIR filters and verify their frequency responses.(L6) **L6**



