

4/4 B.Tech - SEVENTH SEMESTER

EC7L2	Digital Signal Processing Lab	Credits: 2
Lecture: ---		Internal assessment: 25 marks
Lab : 3 periods/week		Semester end examination: 50 marks

Course Objectives:

- To perform DSP algorithms like convolution, DFT & FFT in software using a computer language such as C with TMS320C6713 floating point Processor.
- To design the digital filter types like IIR-Butterworth, Chebyshev, Bilinear, Impulse invariant filters and FIR window-design methods using MATLAB.
- To gain a working knowledge of the design, implementation, and debugging of real time DSP algorithms written in C language or MATLAB for an industry-standard DSP processor.

Learning Outcomes:

Students will be able to

- Design & implement the digital active/passive filter in C and MATLAB programming environments
- Program a DSP chip with a variety of real-time signal processing algorithms such as filtering for noise reduction or digital audio effects
- compute and analyze signal spectrum of digital system using DFT/FFT algorithms in MATLAB
- generate waveforms using digital filter(s)
- develop & implement a real-time DSP project

List of Experiments:

Part – A: (Using MATLAB)

1. Linear convolution of two sequences.
2. Circular convolution of two sequences.
3. DFT & IDFT of the given sequences.
4. Frequency response of analog LP and HP filters.
5. DFT of the given sequence using DIT-FFT / DIF-FFT.
6. Determination of Power Density Spectrum of a given signal.
7. IIR Low pass filter design (Butterworth and Chebyshev approximation).
8. IIR High pass filter design (Butterworth and Chebyshev approximation).
9. FIR Low pass filter design using windowing techniques.
10. FIR High pass filter design using windowing techniques.

Part – B: (Using Code Composer Studio)

9. Linear Convolution.
10. Circular Convolution.
11. Generation of Sine wave & Square wave.
12. Signal Processing using codec.