

## 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

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### 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:

The students undergoing this course 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. Sum of Sinusoidal signals.
2. Frequency response of a system given in difference equation form.
3. Fast Fourier Transform.
4. Determination of Power Spectrum.
5. IIR Low pass filter design.
6. IIR High pass filter design.
7. FIR Low pass filter design.
8. FIR High pass filter design.
9. Implementation of Interpolation and Decimation.

#### Part – B: (Using Code Composer Studio)

10. Linear Convolution.
11. Circular Convolution.
12. Generation of Sine wave & Square wave.
13. Generation of Real time Sine wave.
14. FIR filter design.
15. IIR filter design.