

# GUJARAT TECHNOLOGICAL UNIVERSITY

## M. E. Embedded Systems (Branch Code - 54)

### Year – I (Semester – I)

### Subject: Digital Signal Processing and Applications (710422) Major Elective-I

Sr. No.	Course Content	Hours
1	Discrete Time Signals: Sequences representation of signals on orthogonal basis: Sampling and Reconstruction of signals	4
2	Discrete systems: attributes, Z-Transform, Analysis of LSI systems, Frequency Analysis, Inverse Systems, Discrete Fourier Transform (DTF), Fast Fourier Transform algorithm, Implementation of Discrete Time Systems.	8
3	Design of FIR Digital filters; Window Method, Park-McClellan's method.	6
4	Design of IIR Digital Filters: Butterworth, Chebyshev and Elliptic Approximations; Lowpass, Band pass, Bandstop and High Pass Filters.	8
5	Effect of finite register length in FIR filter design	4
6	Parametric and non-parametric spectral estimation, Introduction to multirate signal processing. Application of DSP to Speech and radar signal processing.	6
7	Overview of DSP Processors, Harvard modified Harvard Architecture, MultiBus architecture, Floating point Vs Fixed point dsp processor. Case Study	4

#### Reference Book:

1. A.V. Oppenheim and Schaffer, Discrete Time Signal Processing, Prentice Hall
2. John G.Proakis and D.G. Manolakis, Digital Signal Processing: Principle, Algorithms and Applications, Prentice Hall
3. L.R. Rabiner and B. Gold, Theory and Application of Digital Signal Processing, Prentice Hall
4. D.J. DeFatta, J.G.Lucas and W.S. Hodgkiss, Digital Signal Processing, J Wiley and Sons, Singapore