

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E

Communication Engineering

Subject Name: **Digital Signal Processing and Applications**

Sr.No	Course content
1	Discrete Time Signals: Sequences representation of signals on orthogonal basis: Sampling and Reconstruction of signals;
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.
3	Design of FIR Digital filters; Window Method, Park-McClellan's method.
4	Design of IIR Digital Filters: Butterworth, Chebyshev and Elliptic Approximations; Lowpass, Band pass, Bandstop and High Pass Filters.
5	Effect of finite register length in FIR filter design
6	Parametric and non-parametric spectral estimation, Introduction to multirate signal processing. Application of DSP to Speech and radar signal processing.
7	Overview of DSP Processors, Harvard modified Harvard Architecture, MultiBus architecture, Floating point Vs Fix point dsp processor. Case Study.

Reference Books:

1. A.V. Oppenheim and Schafer, 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.