

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E. Wireless Communication Technology (EC)

Semester: I

Subject Name: **Advanced Digital Signal Processing**

Subject Code: **714402**

Sr. No.	Course Content
1	Introduction: DSP and its benefits, Discrete time signals and systems, Its representation, Types of systems.
2	Discrete Transforms: Fourier Transform, DFT and its inverse, Property of DFT, Decimation in time FFT Algorithm, Inverse FFT, Decimation in frequency FFT Algorithm, Z- Transform and Inverse Z –Transform, DCT and Wavelet Transform, correlation and Convolution
3	Filter Design: FIR filter design with Specification, FIR Coefficient Calculation Methods, window Method, Optimal Method, Frequency Sampling Method, Realization Structure for FIR Filters, IIR filter design with Specification, IIR Coefficient Calculation Methods(Pole-Zero Placement, Impulse invariant, Matched Z- Transform and Bilinear Z-Transform), Realization Structure for IIR Filters, Design Examples
4	Multi Rate Digital Signal Processing: Introduction, Concept of Multi rate Signal Processing, Design of practical Sampling rate Converters, Application Examples
5	Adaptive Digital Filter: Concept, Basic wiener Filter theory, Basic LMS adaptive algorithm , Recursive least square algorithm , Application examples
6	Applications of Digital Signal Processing
7	General and Special Digital Signal Processors: Introduction, Computer architectures of signal processing, General purpose DSP Processors, Special purpose DSP Hardware
8	Architectural overview of TMS320C67xx DSP processor

Text Books:

1. Emmanuel C. Ifeachor, Barrie W. Jervis , Digital Signal Processing A practical Approach, Pearson Education
2. Sanjit K. Mitra, Digital Signal processing, Tata McGraw- Hill

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