

1.	Title of the course	Digital Signal Processing
2.	Course number	EE209L
3.	Structure of credits (L-T-P-C)	3-0-0-3
4.	New course/modification to	Modified with EE2004/DIGITAL SIGNAL PROCESSING
5.	To be offered by	Electrical Engineering
6.	Prerequisite	None
7.	Course Objective(s): To introduce the analysis and characterization of discrete-time signals and systems. To explore different frequency domain approaches for analysis of signals and system transfer functions.	
8.	Course Content: Review of discrete time signals and systems, and properties of Linear Time Invariant (LTI) systems; Sampling and reconstruction of continuous time signals; Discrete Time Fourier Transform (DTFT); Z-transforms; Frequency domain analysis of LTI systems; Minimum phase all-pass decomposition, generalized linear phase; Discrete Fourier series, frequency sampling, and time aliasing; Discrete Fourier Transform (DFT), periodic and circular convolutions; Fast Fourier Transform (FFT) computations using decimation in time and decimation in frequency algorithms; Finite Impulse Response (FIR) filter design by windowing; Filter structures and realization; Introduction to multirate signal processing: fractional sampling rate conversion; Introduction to time frequency analysis.	
9.	Textbook(s): 1. Oppenheim A V, Schafer R W and Buck J R, Discrete-Time Signal Processing, 3rd Edition, Pearson Education (2014).	
10.	Reference(s): 1. Mitra S K, Digital Signal Processing: A Computer-Based Approach, McGraw Hill Education (2013). 2. Proakis J G and Manolakis D K, Digital Signal Processing: Principles, Algorithms and Applications, 4th Edition, Pearson (2006).	