



Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India
(Autonomous Institute Affiliated to University of Mumbai)

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		L	T	P	L	T	P	Total
ETEL 801	Speech Processing	--	--	2	--	--	1	1
		Examination Scheme						
		ISE		ESE		Total		
				Practical	Oral			
		40	--	20	60			

Pre-requisite Course Codes	ETE801 Speech Processing	
After successful completion of the course, student will be able to		
Course Outcomes	CO1	Demonstrate basic knowledge in speech processing production mechanism, phoneme classification, digital models for speech production, Homomorphic speech processing and LPC analysis.
	CO2	Demonstrate applications of signal processing theory for estimation of speech parameters in time and frequency domain including pitch and formants.
	CO3	Analyze application of speech processing in speech compression, speech recognition and speech synthesis.
	CO4	Enhance their written and oral technical communication skills related to speech processing subjects and will better prepared for higher study and life long learning.

Exp. No.	Experiment Details	Ref.	Marks
1	To understand the difference between stationary and non-stationary signals. To understand the limitations of Fourier transform in case of non-stationary signals.		5
2	Study of speech signals. To get feel about the non-stationary nature of speech signals. Limitations of Fourier transform in speech signals.		5
3	To study different sound units present in majority of Indian languages. To understand the production mechanism of each sound units To learn the time and frequency domain characteristics of different sound units.		5
4	To understand need for short term processing of speech To understand short term energy and study its significances.		5



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5	To understand Zero crossing Rate and find out pitch frequency.		5	
6	To compute short term autocorrelation and study its significances. To perform voiced/unvoiced/silence classifications of speech using short term time domain parameters.		5	
7	To understand the limitations of DTFT for spectral analysis of speech. To understand the development of short term fourier transform (STFT) representation. To plot STFT of a speech signal.		5	
8	To understand the effect of rectangular hamming and Hanning window functions on short term spectral analysis. To understand the effect of frame size on short term spectral analysis.		5	
9	To understand the basic Cepstral Analysis approach. To perform vocal tract and source information separation by cepstral analysis.		5	
10	To compute LP coefficient and LP residual of a given speech signal. To compute the format parameters by LP analysis. To compute the excitation parameters like pitch by LP analysis.		5	
*Any 08 Experiment to be performed.			Total Marks	40

References:

As per recommended by faculty.