GUJARAT TECHNOLOGICAL UNIVERSITY

Wireless Communications Networks and Systems (EC)

M.E. Semester: II

Subject Name: **Speech Processing (Major Elective II)**

Sr. No.	Course Content
1.	Introduction – Speech production and acoustic phonetics, speech perception.
2.	**Speech Analysis:** Time and frequency domain techniques for pitch and formant estimation, cepstral and LPC analysis.
3.	**Speech Enhancement:** Microform Codes, Source coders, and Hybrid coders.
4.	**Speech Enhancement;** Microphone Array processing, Noice Suppression, and Echo Canceller
5.	**Speech Recognition:** Basic pattern recognition, preprocessing, Parametic representation, Evaluating the similarity of speech patter, Accommodating both spectral and temporal variability, Network for speech recognition, Language model, Artificial neural networks. Summary of current speech recognition design.
6.	**Speech synthesis:** Articulatory, formant, and LPC synthesis, voice response and text-to-speech systems.
7.	**Applications:** Data compression, vocoders, speech enhancement, speech recognition speaker recognition, aids for the speech and hearing impairments.

Reference Books:

1. D O'shaughnessy, Speech Communication: Human and Machine, Addison Wesley.
2. L R Rabiner and R W Schaferm, Digital Processing of Speech Signals, Prentice Hall
3. J Flanagan, Speech Analysis, Synthesis, and Perception, Springer Verlag.
4. W. Rappaport, Wireless Communication.