Course Name	Digital Speech Processing
References	1. X.Huang, A.Acero, Spoken Language Processing, Prentice-Hall, 2001. 2. L.Rabiner, Theory and Applications of Digital Speech Processing, Pearson, 2011. 3. Handbook of speech processing, Springer, 2008. 4. Rabiner, Juang, Fundamentals of Speech Recognition, Prentice-Hall, 1993. 5. Dong Yu, Li Deng, Automatic Speech Recognition, A Deep Learning Approach, Springer, 2015.
Course Instructor	Dr. Babak Nasersharif
Syllabus	1. An introduction to digital speech processing and its branches 2. Speech generation and perception in Human 3. A review on Digital Signal Processing basics: Signals and systems 4. A review on Digital Signal Processing basics: Z and Fourier transforms 5. Digital speech Pre-processing methods (Framing and windowing…) 6. digital speech signal in the time domain (energy, Zero crossing, autocorrelation,) 7. digital speech signal in the frequency domain (short-time Fourier transform, spectrogram,…) 8. Cepstrum analysis 9. Anatomy of ear and Mel-cepstrum 10. Cepstral distance and delta-cepstral 11. Linear Prediction Analysis 12. Speech recognition using DTW 13. HMM –Definition and 3 main problems 14. Viterbi and Baum-Welsh algoritgms for HMM 15. GMM-HMM model 16. Evaluations methods of Automatic speech recognition systems (ASR) 17. Other and deep architectures for ASR 18. Continuous and connected speech recognition 19. A review on speech enhancement and robust speech recognition methods