

17PS12E4 - ADVANCED DIGITAL SIGNAL PROCESSING

Instruction/week: 4 hrs.

Univ. Exam: 3 hrs.

Max. Sessional marks: 40

Univ. Exam marks: 60

UNIT –I

Theory of Fourier transform, Properties- power and limitations short time Fourier transformation – The Gabor transform –Discrete Time Fourier transformation and filters banks

UNIT –II

Theory of Adaptive signal processing FIR adaptive filters-steepest descent adaptive filter, adaptive Recursive filters LMS algorithms – conversions of LMS applications –noise cancellation –channel Equalization

UNIT –III

Wavelet transforms- Continuous Wavelet transform, Wavelet transform ideal case, discrete wavelet Transform, Properties of Wavelets, Applications of wavelet transforms.

UNIT –IV

TMS320 Family overview 320C24X series of DSP controllers, Architecture overview , C24X CPU Internal Bus Structure, Memory Central Processing unit , Memory and I/O Spaces , Overview of Memory and I/O Spaces, Program control Address Modes System Configuration and Interrupts clocks and low Power Modes Digital input / output (I/O)

UNIT –V

Assembly language Instruction, Instruction Set summary, Instruction Description, Accumulator, arithmetic and logic Instruction, Auxiliary Register and data page Pointer Instructions , TREG, PREG, and Multiply Instruction ,Branch Instructions , Control Instructions I/O and Memory Instruction

TEXT BOOKS:

1. “DSP Based Electromechanical Motion Control” by Hamid A. Toliyat and Steven G. Campbell, CRC Pres, 2004
2. “Digital Signal Processing, Principles, Algorithms and Applications” by John G. Proakis, Dimitris G.Manobakis, Third edition,(2000) PHI.
3. “Wavelet Transforms, Introduction to Theory and applications” by Raghuvver, M.Rao, Ajit S.Bopardikar, Pearson Education, Asia, 2000.

REFERENCES:

1. Digital Processing of Speech Signals by L.R. Rabiner and R.W. Schaber, Pearson Education
2. Modern Digital Signal Processing by Roberto Crist, Thomson Brooks/Cole (2004).
3. Adaptive filter theory by Simon Haykin , Pearson Education 4th Edition.
4. Statistical Digital signal processing and modeling by Monson H. Hayes , Wiley, 2