Subject Name: CS2043 Digital signal processing

Staff Name : V.GandhimathiAssistantProfessor

Year : Final Year –CSE

UNIT I SIGNALS AND SYSTEMS

Basic elements of DSP – concepts of frequency in Analog and Digital Signals – samplingtheorem – Discrete – time signals, systems – Analysis of discrete time LTI systems – Ztransform – Convolution (linear and circular) – Correlation.

UNIT II FREQUENCY TRANSFORMATIONS

Introduction to DFT – Properties of DFT – Filtering methods based on DFT – FFTAlgorithms Decimation – in – time Algorithms, Decimation – in – frequency Algorithms –Use of FFT in Linear Filtering – DCT.

UNIT III IIR FILTER DESIGN

Structures of IIR – Analog filter design – Discrete time IIR filter from analog filter – IIRfilter design by Impulse Invariance, Bilinear transformation, Approximation of derivatives– (HPF, BPF and BRF) filter design using frequency translation

UNIT IV FIR FILTER DESIGN

Structures of FIR – Linear phase FIR filter – Filter design using windowing techniques,Frequency sampling techniques – Finite word length effects in digital Filters

UNIT V APPLICATIONS

Multirate signal processing – Speech compression – Adaptive filter – Musical soundprocessing – Image enhancement.

TEXT BOOKS:

1. John G. Proakis&DimitrisG.Manolakis, “Digital Signal Processing – Principles,Algorithms& Applications”, Fourth edition, Pearson education / Prentice Hall, 2007.

2. Emmanuel C.Ifeachor, &Barrie.W.Jervis, “Digital Signal Processing”, Secondedition, Pearson Education / Prentice Hall, 2002.

REFERENCES:

1. Alan V.Oppenheim, Ronald W. Schafer &Hohn. R.Back, “Discrete Time Signal

Processing”, Pearson Education, 2nd edition, 2005.

2. Andreas Antoniou, “Digital Signal Processing”, Tata McGraw Hill, 2001