



LESSON PLAN



Sub Code & Name: U15EC515 DIGITAL SIGNAL PROCESSING

Unit : II



Branch : ECE

Semester: V

UNIT II FINITE IMPULSE RESPONSE FILTERS

Symmetric and antisymmetric FIR filters – Linear phase FIR filters – Design using Frequency Sampling technique- Design using (Rectangular, Hamming, Hanning, Blackmann Windows), Realization of FIR filters- Transversal, Linear phase realization structures.

Session No.	Topics to be covered	Time	Teaching Method	Ref
1	FIR filters	45m	Video	R1,R2
2	Linear phase FIR filter - Symmetric	45m	BB	T1,R1
3	Linear phase FIR filter - Anti-symmetric	45m	BB	T1
4	Frequency sampling techniques	45m	PPT	T1
5	Tutorial	45m	-	T1
6	Filter design using windowing techniques - Rectangular Window, Hamming Window	45m	PPT	T1,R1,R2
7	Filter design using windowing techniques - Hanning Window	45m	PPT	T1,R1,R2
8	Blackmann Window	45m	BB	R1,R2
9	Tutorial	45m	-	R1
10	Structures of FIR - Transversal, Linear phase realization structures	45m	PPT	T1

	LESSON PLAN		
	Sub Code & Name: U15EC515 DIGITAL SIGNAL PROCESSING Unit : III Branch : ECE Semester: V		

UNIT III INFINITE IMPULSE RESPONSE FILTERS

9

Design of analog butter worth and chebyshev type I filters, analog transformation of prototype LPF to BPF/BSF/HPF. Transformation of analog filters into equivalent digital filters using impulse invariant method and bilinear Z transform method, pre warping, frequency transformation in digital domain. Realization of IIR Digital filters: Direct, Cascade and parallel forms. Comparison of FIR & IIR

Session No.	Topics to be covered	Time	Teaching Method	Ref
1	Structures of IIR filters	45m	PPT	T1,R2
2	Analog filter design-Butterworth filter and its characteristics	45m	BB	T1,R1
3	Discrete time Butterworth IIR filter from analog filter by Impulse Invariance	45m	BB	T1
4	Analog filter design-Chebyshev filter and its characteristics	45m	BB	R1,R2
5	Impulse Invariant method	45m	BB	T1
6	Discrete time Chebyshev IIR filter from analog filter by Bilinear transformation.	45m	Video	T1
7	Pre warping	45m	PPT	R1
8	Frequency Transformation in digital domain	45m	PPT	T1
9	Realization of IIR digital filters-Direct and Cascade Forms	45m	BB	R1,R2
10	Comparison of FIR and IIR	45m	Video	R1,R2
11	Tutorial	45m	-	T1



LESSON PLAN

Sub Code & Name: U15EC515 DIGITAL SIGNAL PROCESSING

Unit : V

Branch : ECE

Semester: V



UNIT V DIGITAL SIGNAL PROCESSORS

DSP functionalities- Circular Buffering-DSP Architecture – Harvard Architecture- Dedicated MAC unit- Multiple ALUs, Addressing modes, Pipelining, Overview of instruction set of TMS320C5X/TMS320C54X and simple programming examples.

Session No.	Topics to be covered	Time	Teaching Method	Ref
1	DSP Functionalities	45m	Video	R3
2	Circular buffering	45m	BB	T2
3	DSP Architecture- Harvard Architecture	45m	PPT	T2
4	Dedicated MAC unit	45m	PPT	T2
5	Multiple ALU's addressing modes	45m	BB	T2
6	Pipelining	45m	BB	T2
7	Overview of instruction set of TMS320C5X	45m	PPT	T2
8	Programming examples.	45m	BB	T2

TEXT BOOK:

1. John G. Proakis & Dimitris G. Manolakis, "Digital Signal Processing – Principles, Algorithms & Applications", Fourth Edition, Pearson Education 2007.
2. Venkataramani & M. Bhaskar, "Digital Signal Processor Architecture, Programming and Application", TMH 2002.

REFERENCES:

1. Sanjit K. Mitra, "Digital Signal Processing – A Computer Based Approach", 4th edition, Copyright 2011, The McGraw-Hill Companies, Inc
2. A.V. Oppenheim, R.W. Schaffer and J.R. Buck, "Discrete-Time Signal Processing", 8th Indian Reprint, Pearson, 2004.
3. Steven W. Smith, "Digital Signal Processing-A practical guide for Engineers and Scientist", Newnes publications, 2003.
4. www.nptel.ac.in
<http://ocw.mit.edu/resources/res-6-008-digital-signal-processing-spring-2011/video-lectures/lecture-17-design-of-fir-digital-filters/>.

	Prepared by	Approved by
Signature		
Name	Mrs. M.KARTHIGA	Dr.D.SASIKALA
Designation	Assistant Professor / ECE	PROF & HOD-ECE
Date		