

Course Code	Course Title	L	T	P	C
1151EC113	WIRELESS DIGITAL COMMUNICATION	3	2	0	4

a) Course Category

Program Core

b) Preamble

This course provides the information about the base band and pass band transmission schemes, enabling the student to determine errors, study different keying techniques, also know about information theory and channel coding.

c) Prerequisite

Basic Electronics Engineering, Analog Electronics, Analog Communication systems.

d) Related Courses

Mobile communication, Satellite Communication

e) Course Outcomes

On successful completion of this course the student will be able to

CO Nos.	Course Outcomes	Knowledge Level (Based on Revised Bloom's Taxonomy)
CO1	Explain the concept of sampling and various wave form coding schemes.	K2
CO2	Apply the baseband transmission techniques using Nyquist criterion	K3
CO3	Identify the performance features of various data transmission schemes in pass band transmission	K3
CO4	Compute the original transmitted code words after the noise introduction in the transmission path	K3
CO5	Explain the concept of channel modeling and fading in wireless communication.	K2

f) Correlation of Co's with Po's

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	M	L	L	L	-	L	-	-	L	-	L	M	M	-
CO2	H	H	M	H	L	-	-	L	-	-	-	M	L	-

CO3	H	H	H	H	H	-	-	-	-	-	L	H	H	-
CO4	H	H	H	M	H	-	-	-	-	L	-	M	L	-
CO5	H	M	M	M	M	-	-	-	L	M	-	M	L	-

g) Course Content

UNIT I Sampling process and wave form coding 12

Basic elements of a digital communication system-Sampling Theorem - Sampling and signal recovery -PAM, PCM -Channel noise and error- Quantization Noise-SNR -TDM -DM- ADMLinear prediction, - DPCM

UNIT II Baseband Pulse Transmission 12

Discrete PAM signals - Matched filter - Intersymbol Interference- Nyquist's criterion for Distortion less Transmission- Correlative coding –Baseband M-ary PAM systems -Adaptive Equalization-Eye patterns

UNIT III Pass band transmission 12

Gram-Schmidt Orthogonalization Procedure; Geometric Interpretation of Signals; Correlation Receiver- Introduction to digital modulation schemes- Generation, Detection, BW,PSD of ASK, FS1K, PSK, DPSK, QPSK, Comparison of digital modulation systems - Carrier and symbol synchronization.

UNIT IV Error Control Coding 12

Channel coding theorem -Linear block codes - Cyclic codes –Convolutional codes - Maximum likelihood decoding - Viterbi Algorithm- Trellis coded modulation.

UNIT V Wireless Channel Models 12

Basic cellular concepts- propagation effects-Fading- Channel models- statistical characterization of multipath channels, Delay spread and Doppler spread, classification of multipath channels. Diversity techniques.

Total 60 Hrs

h) Learning Resources

Text Books

1. Simon Haykins, "Communication Systems", John Wiley, 4th Edit

Reference Books

1. Sam K.Shanmugam "Analog& Digital Communication" John Wiley.
2. John G.Proakis, "Digital Communication" McGraw Hill 3rd Edition, 1995
3. Dr J.S Chithode, " Analog and Digital communication" Technical publicarion, 3rd Edition 2012.
4. Taub& Schilling , "Principles of Digital Communication " Tata McGraw-Hill"28th reprint,2003

Online Resources

1. <http://nptel.iitm.ac.in/courses/-0DataCommunication>
2. <http://www.sp4comm.org/docs/chapter12.pdf>

