

COURSE CODE	COURSE TITLE	L	T	P	C
1151IT115	Wireless Communication	3	0	0	3

Course Category: Program Core

a. Preamble:

Describes the concepts of wireless / mobile communication using cellular environment. Details of various modulation techniques, propagation methods, coding and multi access techniques used in mobile communication.

b. Pre-requisites:

Sl. No	Course Code	Course Name
1	1151IT108	Computer Networks

c.Related Courses

Sl.No	Course Code	Course Name
1	1152IT104	Mobile ad hoc and Sensor Networks
2	1151IT113	Mobile Communication

D. Course Outcomes:

CO Nos	Course Outcomes	Level of learning domain (Based on revised Bloom's taxonomy)
CO1	Explain the techniques and services of wireless communication	K3
CO2	Demonstrate the propagation mechanism	K3
CO3	Illustrate the shift keying strategies	K3
CO4	Describe the signal processing system.	K2
CO5	Summarize transceiver schemes	K3

f. Correlation of COs with Program Outcomes

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	M	L	L								
CO2			M	L	L							
CO3		M	M	M		L						
CO4		M	M	M	L	H						
CO5			M	L	M		L					

H- High; M-Medium; L-Low

g.Course Content

UNIT I SERVICES AND TECHNICAL CHALLENGE 9

Types of Services, Requirements for the services, Multipath propagation, Spectrum Limitations, Noise and Interference limited systems, Principles of Cellular networks, Multiple Access Schemes.

UNIT II WIRELESS PROPAGATION CHANNELS 9

Propagation Mechanisms (Qualitative treatment), Propagation effects with mobile radio, Channel Classification, Link calculations, Narrowband and Wideband models.

UNIT III WIRELESS TRANSCEIVERS 9

Structure of a wireless communication link, Modulation and demodulation – Quadrature Phase Shift Keying, $\pi/4$ -Differential Quadrature Phase Shift Keying, Offset-Quadrature Phase Shift Keying, Binary Frequency Shift Keying, Minimum Shift Keying, Gaussian Minimum Shift Keying, Power spectrum and Error performance in fading channels.

UNIT IV SIGNAL PROCESSING IN WIRELESS SYSTEMS 9

Principle of Diversity, Macrodiversity, Microdiversity, Signal Combining Techniques, Transmit diversity, Equalisers- Linear and Decision Feedback equalisers, Review of Channel coding and Speech coding techniques.

UNIT V ADVANCED TRANSCEIVER SCHEMES 9

Spread Spectrum Systems- Cellular Code Division Multiple Access Systems- Principle, Power control, Effects of multipath propagation on Code Division Multiple Access, Orthogonal Frequency Division Multiplexing – Principle, Cyclic Prefix, Transceiver implementation, Second Generation (GSM, IS-95) and Third Generation Wireless Networks and Standards

TEXT BOOKS

1. Andreas.F. Molisch, “Wireless Communications”, John Wiley – India, 2006.
2. Simon Haykin & Michael Moher, “Modern Wireless Communications”, Pearson Education, 2007.

REFERENCES

1. Rappaport. T.S., “Wireless communications”, Pearson Education, 2003.
2. Gordon L. Stuber, “Principles of Mobile Communication”, Springer International Ltd., 2001.
3. Andrea Goldsmith, Wireless Communications, Cambridge University Press, 2007.