

Devi Ahilya University, Indore, India Institute of Engineering & Technology				IV Year B.E. (Electronics & Instrumentation Engg.)			
Subject Code & Name	Instructions Hours per Week			Credits			
EIR6E3	L	T	P	L	T	P	Total
Mobile and Wireless Communication	3	1	2	3	1	2	5
Duration of Theory Paper: 3 Hours							

Rationale: This course introduces technologies for mobile and wireless communication, wireless access network and multiplexing.

Prerequisites: Basic knowledge of Wireless communication and Networks.

Course Contents

Unit-I

Introduction to wireless communications: history and evolution, current wireless communication systems, requirements of wireless services, and technical challenges of wireless communications.

Unit-II

Propagation and System Planning: Radio wave propagation in the mobile environment: Free-space propagation, propagation mechanisms, large scale and small scale fading, path loss models, statistical channel models: narrowband and wideband models, System Planning: mobile radio link design, and introduction to radio network planning.

Unit-III

Overview of wireless access networks: base and subscriber stations, multiple access technologies, noise and interference in wireless communication systems, diversity reception, MIMO communication: MIMO narrowband channel model, transmit diversity and spatial multiplexing

Unit-IV

Evolution of cellular systems, principles and operation of cellular systems, narrowband systems: FDMA and TDMA systems, frequency planing, and capacity considerations, CDMA wideband systems: resource allocation, soft handover, power control, interference and capacity, OFDMA wideband systems, and Standardized cellular communications systems.

Unit-V

Wireless LANs, wireless MANs, short range wireless networks, standards, capabilities and applications, broadband wireless networks, and integration of different types of wireless networks

Learning Outcomes:

At the end of the module the student will be able to:

1. explain relative merits and demerits of wireless communication technologies.
2. select a wireless technology or a combination of technologies to suit a given application.
- 3 plan a wireless communications system for a given environment in which it is to be deployed.

Books Recommended:

1. A. Goldsmith , “Wireless Communications”, Cambridge University Press, 2005.
2. A. Molisch, “Wireless Communications”, Wiley-IEEE, 2nd Edition, 2010
3. T. S. Rappaport, “Wireless Communications: Principles and Practice”, Prentice Hall, 2nd Edition,2002