

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING  
SYLLABUS FOR B.E. IV SEMESTER

**BASICS OF WIRELESS COMMUNICATIONS** (for other Branches)

Instruction: 2 Hrs /week	SEE Marks : 60	Course Code : OE430EC
Credits : 2	CIE Marks : 40	Duration of SEE : 3 Hrs

Course Objective	Course Outcomes
1. To provide fundamental principles and concepts required to understand the wireless communication systems.	<b>At the end of the course, students will be able to:</b> 1. Demonstrate the fundamental knowledge of wireless communication systems. 2. Differentiate between large scale & small scale fading channel effects. 3. Calculate the path loss, coverage area and power budgeting related aspects. 4. Acquaint with recent advancements and developments in the area of wireless communication systems.

**UNIT - I**

Introduction to Wireless Communication Systems: Evolution of Mobile Radio Communications, Examples of Wireless Communications Systems.

The Cellular Concept – System Design Fundamentals: Introduction, Frequency Reuse, Channel Assignment Strategies, Handoff Strategies, Interference and System Capacity, Improving Coverage and Capacity in Cellular Systems.

**UNIT - II**

Mobile Radio Propagation: Large Scale Path Loss: Introduction to Radio wave Propagation, Free Space Propagation Model, Reflection, Ground Reflection (Two-Ray) Model, Diffraction, Scattering.

Mobile Radio Propagation: Small Scale Fading and Multipath: Small Scale Multipath Propagation, Small – Scale Multipath Measurements, Parameters of Mobile Multipath Channels, Types of Small-Scale Fading.

**UNIT - III**

Multiple Access Techniques for Wireless Communications: Introduction, Frequency Division Multiple Access (FDMA), Time Division Multiple Access (TDMA), Code Division Multiple Access (CDMA), Space Division Multiple Access (SDMA).

**UNIT - IV**

Wireless Systems and Standards: Global System for Mobile (GSM), CDMA Digital Cellular Standard (IS-95), Bluetooth and Personal Area Networks (PANs).

**Suggested Reading:**

1. Theodore S. Rappaport, Wireless Communications Principles and Practices, 2<sup>nd</sup> edition, Pearson Education.
2. David Tse, Pramodh Viswanath, Fundamentals of Wireless Communication, 2005, Cambridge University Press.