

**DEPARTMENT OF ELECTRONICS**  
**MSc Electronics**

III - Semester

**ELH503 - Wireless Communication Systems**

**UNIT I**

**Introduction to Wireless Communication Systems:** Evolution of Mobile Radio Communications, Mobile Radio Systems around the world, examples of Wireless Communication Systems, Paging System, Cordless Telephone System. Cellular Telephone Systems, Comparison of Common Wireless Communications Systems.

**Modern Wireless Communications Systems:** Second generation (2G), Cellular Networks, evolution of 2.5G, TDMA Standards, Third Generation (3G) Wireless Networks, Wireless Local Loop (WLL) and LMDS, Wireless Local Area Networks (WLANs), Bluetooth and Personal Area Networks (PANS) **14 hours**

**UNIT II**

**The Cellular Concept:** System Design Fundamentals, Introduction, Frequency reuse, channel assignment strategies, handoff strategies – prioritizing handoffs, Practical Handoff considerations, Interference and system capacity, co-channel interference and system capacity, channel planning for wireless systems, adjacent channel interference, power control for reducing interference

**Mobile Radio Propagation:** Introduction to radio wave propagation, Free space propagation model, Relating power to electric field, Reflection, Diffraction, Scattering. **14 hours**

**UNIT III**

**Multiple Access Techniques for Wireless Communications:** Introduction to Multiple access, Frequency Division Multiple Access (FDMA), Time Division Multiple Access (TDMA), Spread Spectrum Multiple Access, Space Division Multiple Access (SDMA). Packet radio.

**Wireless Networking:** Introduction to wireless networks, Differences between wireless and fixed telephone network-PSTN network, Development of Wireless network, Fixed network transmission hierarchy, personal communication services/ networks, Wireless data services, ISDN & ATM, PRMA & UMTS **14 hours**

**Text Books:**

1. Theodore S Rappaport: Wireless Communications, Principles and Practice, 2 nd Edition, Pearson Education Asia, 2002.

**Reference Books:**

3. William C Y Lee: Mobile Communications Engineering Theory and Applications, 2nd Edition, McGraw Hill Telecommunications 1998.
4. William Stallings: Wireless Communications and Networks, Pearson Education Asia, 2002.