



MANIPAL UNIVERSITY JAIPUR

Department of Electronics and Communication Engineering
Course Hand-out

Mobile Communication | ECI653 | 1 Credits 3

Session: Jul- Dec 2014 | Faculty: Tarun Kumar Dubey

Course Outcomes: At the end of the course, students will be able to

ECI653.1 To become familiar with evolution and fundamentals of wireless communication systems.

ECI653.2 To become familiar with cellular telephone systems, trends in cellular radio and personal communication systems.

ECI653.3 To know Wireless Systems and Standards in order to fulfil the requirements of present day employers

ECI653.4 Analyze and design the cellular systems for industrial applications.

A. SYLLABUS

Introduction to Wireless Communication Systems: Evolution and Fundamentals, Examples of Wireless Communication Systems, Cellular Telephone Systems, Trends in Cellular Radio and Personal Communication Systems; Cellular Concepts: Frequency for Radio Transmission, Frequency Reuse, Channel Assignment Strategies, Handoff Strategies, Interference and System Capacity, Improving the Coverage and Capacity of Cellular Systems. Multiple Access System, TDMA, FDMA, CDMA; Medium Access Control: Hidden and Exposed, Far and Near Problem, Protocol for MAC; Mobile Radio Propagation: Large Scale Path Loss, Free Space Propagation Model, Ground Reflection Model, Diffraction, Scattering, Practical Link Budget Design using Path Loss Models, Outdoor Propagation Models, Indoor Propagation Models, Signal Penetration through Buildings. Small Scale Fading and Multipath Propagation, Impulse Response Model, Multipath Measurements, Parameters of Multipath Measurements, Types of Small Scale Fading: Time Delay Spread, Doppler Spread; Rayleigh and Ricean Distributions; Modulation Techniques used for Mobile Radio: Amplitude Modulation, Angle Modulation, Digital Modulation, Linear Modulation, Constant Envelope Modulation, Combined Linear and Constant Envelope Modulation, Performance of Modulation in Fading and Multipath Channels; Wireless Systems and Standards: AMPS, ETACS, USDC, GSM – System Architecture, Radio Subsystem, Channel Types, Frame Structure, Signal Processing in GSM; GPRS, CDMA Digital Cellular Standards, PACS, Wireless LANs, Future advancement in Mobile Network.

B. TEXT BOOKS

1. T. S. Rappaport, Wireless Communications Principles and Practice, Pearson Education, Asia.
2. K. Feher, Wireless Digital Communications, Modulation and Spread Spectrum Applications, Eastern Economy Edition.
3. W. C. Y. Lee, Mobile Cellular Telecommunications, McGraw Hill International.
4. J. H. Schiller Mobile Communication.

