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EC6801 WIRELESS COMMUNICATION

DETAILED SYLLABUS

UNIT I WIRELESS CHANNELS

Large scale path loss – Path loss models: Free Space and Two-Ray models -Link Budget design – Small scale fading- Parameters of mobile multipath channels – Time dispersion parameters- Coherence bandwidth – Doppler spread & Coherence time, Fading due to Multipath time delay spread – flat fading – frequency selective fading – Fading due to Doppler spread – fast fading – slow fading.

UNIT II CELLULAR ARCHITECTURE

Multiple Access techniques - FDMA, TDMA, CDMA – Capacity calculations–Cellular concept- Frequency reuse - channel assignment- hand off- interference & system capacity- trunking & grade of service – Coverage and capacity improvement.

UNIT III DIGITAL SIGNALING FOR FADING CHANNELS

Structure of a wireless communication link, Principles of Offset-QPSK, p/4-DQPSK, Minimum Shift Keying, Gaussian Minimum Shift Keying, Error performance in fading channels, OFDM principle – Cyclic prefix, Windowing, PAPR.

UNIT IV MULTIPATH MITIGATION TECHNIQUES

Equalisation – Adaptive equalization, Linear and Non-Linear equalization, Zero forcing and LMS Algorithms. Diversity – Micro and Macrodiversity, Diversity combining techniques, Error probability in fading channels with diversity reception, Rake receiver,

UNIT V MULTIPLE ANTENNA TECHNIQUES

MIMO systems – spatial multiplexing -System model -Pre-coding - Beam forming – transmitter diversity, receiver diversity- Channel state information-capacity in fading and non-fading channels.

TEXTBOOKS

1. Rappaport,T.S., “Wireless communications”, Second Edition, Pearson Education, 2010.

www.SmartPoet.net www.PhotoShip.net

2. Andreas. F. Molisch, “Wireless Communications”, John Wiley – India, 2006.

REFERENCES

1.David Tse and Pramod Viswanath, “Fundamentals of Wireless Communication”, Cambridge University Press, 2005.

2. Upena Dalal, “ Wireless Communication”, Oxford University Press, 2009.

3. Van Nee, R. and Ramji Prasad, “OFDM for wireless multimedia communications”, Artech House, 2000.

OBJECTIVES

The student should be made to:

- Be familiar with the characteristic of wireless channel.
- Understand the design of a cellular system.
- Learn the various digital signaling techniques and multipath mitigation techniques.
- Be exposed to the concepts of multiple antenna techniques.