MANGALORE UNIVERSITY

DEPARTMENT OF M.Sc. COMPUTER SCIENCE

MASTER OF COMPUTER APPLICATIONS (MCA) PROGRAMME

MCAS408:WIRELESS COMMUNICATION		
Hours/Week: 4 **Credits : 4**		**I.A. Marks: 30** **Exam. Marks: 70**

Course Outcomes:

CO1: Explain the basic concepts of wireless network and wireless generations.

CO2: Demonstrate the different wireless technologies such as CDMA, GSM, GPRS etc.

CO3: Appraise the importance of Ad-hoc networks such as MANET and VANET and Wireless Sensor networks

CO4: Describe and judge the emerging wireless technologies standards such as WLL, WLAN, WPAN, WMAN. 5. Explain the design considerations for deploying the wireless network infrastructure.

CO5: Differentiate and support the security measures, standards. Services and layer wise security considerations

	UNIT-I	12 Hours

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	12 Hours

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	12 Hours

Digital Signalling 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	**12 Hours**

Multipath Mitigation Techniques: Equalization – Adaptive equalization, Linear and Non-Linear equalization, Zero forcing and LMS Algorithms. Diversity – Micro and Macro diversity, Diversity combining techniques, Error probability in fading channels with diversity reception, Rake receiver. 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

REFERENCE BOOKS

1. Rappaport,T.S., "Wireless communications", Second Edition, Pearson Education, 2010.
2. AndreasF. Molisch, "Wireless Communications", John Wiley – India, 2006.
3. David Tse and PramodViswanath, "Fundamentals of Wireless Communication", Cambridge University Press, 2005.
4. UpenaDalal, "Wireless Communication", Oxford University Press, 2009.
5. Van Nee, R. and Ramji Prasad, "OFDM for wireless multimedia communications", Artech House, 2000.