

#### FOURTH YEAR

<b>Modern Communication Systems</b>	<b>COE402</b>
<b>Prerequisite: COE308 and COE309</b>	<b>(2-2-1-0)</b>

Diversity Techniques: Data transmission using multiple carriers; multicarrier modulation with overlapping subchannels; mitigation of subcarrier fading; discrete implementation of multicarrier; challenges in multicarrier systems. Adaptive Modulation and Coding: Adaptive transmission system; adaptive techniques; variable-rate Variable-power MQAM; General M-Ary modulation. Multicarrier Modulation and OFDM: Data Transmission using Multiple Carrier; Multicarrier Modulation with overlapping subchannels; Mitigation of subcarrier fading; discrete implementation of multicarrier; challenges in multicarrier systems. MIMO Communications: Narrowband MIMO model; Parallel Decomposition of the MIMO channel; MIMO channel capacity; MIMO diversity Gain: beamforming; diversity-multiplexing trade-off; space-time modulation and coding. Introduction to LTE: The Evolution of Cellular System; Transmission Scheme and scheduling of LTE; Inter-Cell Interference Coordination; what are Heterogeneous Cellular Networks (HetNet)?; Multi-Antenna Transmission in LTE; spectrum flexibility; LTE Release 10; Gigabit MIMO Transmission and Relaying; Terminal Capabilities; Radio-Interference Architecture: Core Network; Design Principles of LTE; Network Architecture. Introduction to Cognitive Radio.