**ECBY21 RF WIRELESS SYSTEMS AND standards L T P C**

**3 0 0 3**

**Objective:**

# To learn and acquire knowledge on

* + Wireless and RF standards
  + 2G,3G and 4G technologies and its spectrum
  + WLAN, WIMAX and UWB standards

**MODULE I**  **INTRODUCTION TO CELLULAR STANDARDS**: **9**

2G GSM, Cell structure, Frequency Bands and Channels- Call processing, Identity numbers, Frame structure, Interfaces, GMSK modulation, Voice and data processing, GPRS, EDGE, EDGE+, CDMA signal processing, IS-2000 system, Frequency bands, Channel allocation, CDMA cell capacity, services provided by IS-2000, 1xEVDO signal processing and data services-3G UMTS signal processing, WCDMA, HSPA, HSPA+, Towards 4th G, LTE and LTE advanced.

**MODULE II Wireless Systems: 9**

Advanced Mobile Phone Systems (AMPS) – Characteristics – Operation – General Working of AMPS Phone System – Global System for Mobile Communication – Frequency Bands and Channels – Frames – Identity Numbers – Layers, Planes and Interfaces of GSM – International Mobile Telecommunications (IMT-2000) – Spectrum Allocation – Services provided by 3G Cellular Systems – Harmonized 3G Systems – Universal Mobile Telecommunications Systems (UMTS) .

**MODULE III THE IEEE 802.11 WLAN Standard:** **9**

Introduction to IEEE 802.11 – General Description – Medium Access Control (MAC) – Physical Layer for IEEE 802.11 Wireless LANs; Radio systems – IR Systems Applications.

**MODULE IV The IEEE 802.16 WiMax Standard:** **9**

Introduction to IEEE 802.16 – General Description – Medium Access Control (MAC) –Radio systems – Physical Layer- Evolution to 802.16m-Bluetooth, Zigbee, RFID

**MODULE V Recent Advances: 9**

Introduction – Ultra Wide Band (UWB) Technology – Characteristics – Signal Propagation – Current Status and Applications – Advantages – Disadvantages – Challenges and Future Directions.

**Total: 45**

**References:**

1. Assuncion Santamaria, Francisco Lopez-Hernandez, “Wireless LAN Standards and Applications”, Artech House, 2001.
2. Dharma Prakash Agarwal and Qing- An zeng, “Introduction to Wireless and Mobile Systems”, Vikas publishing House, New Delhi, 2004.
3. Neeli Prasad and Anand Prasad, “WLAN System & Wireless IP for Next Generation Communications”, Artec House, 2002.
4. Moray Rumney : LTE and the Evolution to 4G Wireless”,Wiley,2009

**OUTCOME:**

On completion of this course, the students will have the knowledge on the latest technologies and standards like 3G, 4G and UWB.