GUJARAT TECHNOLOGICAL UNIVERSITY

M.E. Embedded Systems (Branch Code - 54)

Year – I (Semester – II) (W.E.F. January 2014)

Subject Name: Embedded Wireless Technologies-Major Elective II (725403)

Course Content:

Sr. No.	Course Content	Hours
1	Basics of Wireless Communication Technologies - Radio architectures: TRF, single conversion and dual conversion, IQ Modulation - AM, FM, SSB, TDMA, **FDMA,**CDMA, OFDM, **BPSK**,QPSK; PLL – phase locked loops, Wireless Standards – IS-136, IS-95, 802.11(a-g), GSM, 3G, WiMax, 4G, LTE, Ultra Wide Band, Cognitive Radio, Software Defined Radio, **RFID**, **MIMO.**	**16**
2	Embedded Systems – Hardware, Software, Internet Access; Socket Programming – Internet Architecture, UDP, TCP, client/server; Internet Application Protocols – HTTP, FTP, SNMP, Audio/Video Applications	**10**
3	Embedded systems hardware and software interfaces; Protocol Debugging & Testing Tools – PING, Sniffers, Load Generators; Development tools – SDK, simulators, debuggers; TCP/IP – architecture, socket programming and debugging	**10**
4	Wireless Technologies and Implementation - Wireless LAN : 802.11 & WiMAX, RFID & Bluetooth, GSM & GPRS, Bluetooth – architecture, protocols, implementation, and programming API; WiFi – architecture, protocols, implementation, and API; ZigBee – architecture, protocols, Real time Implementation of GSM & GPRS, TCP/IP, Bluetooth, ZigBee and WiFi modules with Microcontroller, RFID Implementation with Microcontroller.	**10**
5	Practical application of Embedded system in Wireless field. Health Monitoring and data Transmission by embedded unit, Event detection and Transmission in Traffic surveillances, Industrial Automation and agriculture.	**08**
	Total	**54**

Reference Book:

1. Embedded Systems and Wireless Technology: Theory and Practical Applications, Raul A. Santos, CRC Press
2. Embedded Systems and Wireless Technology: Theory and practical applications by Dr. Raúl Aquino santos, MSc. Arthur Edwards Block (University of Colima, Mexico)

3. Fundamentals of Mobile and Pervasive Computing by Frank Adelstein, Sandeep K.S. Gupta, Golden G. Richard III, and Loren Schwiebert, Publisher: McGraw-Hill Education, 2005, ISBN-10:0071412379, ISBN-13: 978-0071412377.
4. Context-Aware Pervasive Systems: Architectures for a New Breed of Applications by Seng Loke, Publisher: AUERBACH, 1st edition (December 7, 2006), ISBN-10: 0849372550, ISBN-13: 978-0849372551
5. Cooperating Embedded Systems and Wireless Sensor Networks by Michel Banatre (Editor), Pedro Jose Marron (Editor), Anibal Ollero (Editor), Adam Wolisz (Editor)