Syllabus of Proposed Open Elective for BE (E & TC)

404190: Advanced Trends in Telecommunication

Teaching Scheme: Lectures: 4 hrs/ Week

Examination Scheme: Paper: 100 Marks (3 hrs Duration)

Unit I
Wireless Ad-hoc and Sensor Networks

Unit II
Internet of Things (IoT)
IoT Vision, Conceptual framework of IoT, Role of RFID in IoT, Applications of IoT, Ubiquitous computing, virtualization of network resources and physical devices in IoT, Interoperability, Standardization and Governance in the era of IoT. (8 Hours)

Unit III
Green Information and Communication Technology (ICT)
Smart Grid Concept, smart meters, Grid side & Customer side, Smart City, Electric vehicles, Substation and feeder monitoring, Wide area measurement (WAM), Distributed generation support, Energy measurements, Intelligent housing, Life-cycle efficient production, Use cases. (8 Hours)

Unit IV
Software Defined Radio and Cognitive Radio Networks
The motivation and purpose, Implementation scenarios and issues, Heterodyne Architecture of SDR, Related Technologies, Constraints for coexistence, Multi-channel modulations, Wideband RF processing, RF/IF re-configurability , Introduction to Cognitive Radio concept,

Unit V

Cooperative Communications and Networks

Introduction to the cooperative communication, Basic techniques, MIMO and Smart Antennas, Purpose, benefit and drawbacks, Applications of Cooperative Communications, Implementation scenarios and issues, Introduction to Advanced Issues in Cooperative Communication, Use cases. (8 Hours)

Unit VI

Wireless Aspects of Tele-healthcare

The application of advanced telecommunication, the special requirements especially related to reliability, privacy and trust, Regulatory and safety aspects of tele-healthcare, Cognitive radio and flexible spectrum usage for tele-healthcare, Cooperative Communications for Tele-health, Use cases. (8 Hours)

Text Books:


Reference Books:

1. Lu Yan, Yan Zhang, Laurence T. Yang, Huasheng Ning, “The Internet of Things: From RFID to the Next-Generation Pervasive Networked Systems”.
