Course Title: **Selected Topics in Networking and Communication** Course No. **CS661**
Department: Computer Science and Engineering L-T-P [C] 3-0-0 [3]
Offered for: M. Tech. / B. Tech final year Type Elective
Pre-requisite: Basics of Data Communication and Computer Network To take effect from July'14

Objectives

1. To pursue selected topics in data communication & networking

Learning Outcomes

1. Ability to address research level problem in data communication & networking

Course Contents **Total Hours (42)**

1. MANET and VANET: Introduction, Self-organizing behaviour, Co-operation, MAC, Routing, Multicast routing, Mobility model, Transport layer 8
2. WSN: Coverage, Topology management, MAC, Routing, Transport layer 4
3. IoT: IoT Architecture, Layered Protocol Stack, Secured Communication in IoT 6
4. WLAN (WiFi): MAC, Secure Communication, Different Versions of WiFi 6
5. Software Defined Networking (SDN): Management issues in present network architecture, Evolution of SDN, SDN architecture - data plane vs control plane, Examples of SDN controllers - OpenFlow architecture, SDN Programming 8
6. Virtualization: Data Centre Virtualization, Hypervisor Architecture, Network Virtualization, Virtual Network management and QoS, Replica Management and Geo-load balancing 6
7. Cellular Networks, Wireless Communication in Cellular Networks, Cognitive Radio Networks 4

Reference Books:

1. Wireless Sensor Networks, by Ian F. Akyildiz and Mehmet Can Vuran, 2010, John Wiley & Sons Ltd.
2. Guide to Wireless Ad Hoc Networks, by Sudip Misra, Isaac Woungang, and Subhas Chandra Misra, 2009, Springer-Verlag London Limited.
3. Guide to Wireless Sensor Networks, by Sudip Misra, Isaac Woungang, and Subhas Chandra Misra, 2009, Springer-Verlag London Limited.
4. Internet of Things: A Hands-On Approach, by Arsheep Bahga and Vijay Madisetti, 1st Ed., 2015, Orient Blackswan Private Limited.

5. The Internet of Things: Key Applications and Protocols, by David Boswarthick, Omar Elloumi and Olivier Hersent, 2015, Wiley Publisher.
6. Practical Internet of Things Security, by Brian Russell and Drew Van Duren, 1st Ed, 2016, Packt Publishing Limited.
7. SDN – Software Defined Networks, by Thomas Nadeau and Ken Gray, 1st Ed., 2013, O'Reilly Media.
8. Software Defined Networks: A Comprehensive Approach, by Paul Goransson and Chuck Black, 2nd Ed., 2016, Morgan Kaufmann Publisher.