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| **Course Title** | **Computer Networks Lab** | | |
| **Course Code** | **CC-214-L** | | |
| **Credit Hours** | 3 (2,1) | | |
| **Category** | Computing Core | | |
| **Prerequisite** | None | | |
| **Co-Requisite** | None | | |
| **Follow-up** | None | | |
| **Course Learning Outcomes (CLOs)** | At the end of the lab, the students will be able to: | **BT** | **PLO** |
| | CLO1: Describe the key terminologies and technologies of computer networks | C2 (Describe) | 1 |
| | CLO2: Explain the services and functions provided by each layer in the Internet protocol stack | C2 (Explain) | 1 |
| | CLO3: Identify various internetworking devices and protocols and their functions in a networking | C4 (Identify) | 1,2 |
| | CLO4: Analyze working and performance of key technologies, algorithms and protocols | C4 (Analyze) | 3 |
| | CLO5: Build Computer Network on various Topologies. | P3 (Build) | 4,5 |
| **Course Description** | **Introduction**: Protocols architecture, basic concepts of networking, network topologies. **Layered Architecture**: Physical layer functionality, data link layer functionality, multiple access techniques, circuit switching and packet switching, LAN technologies, wireless networks, MAC addressing, networking devices, network layer protocols**,** IPv4 and IPv6, IP addressing, subnetting, CIDR, routing protocols, transport layer protocols, ports and sockets, connection establishment, flow and congestion control, application layer protocols, latest trends in computer networks.<br>The lab contents are divided into two parts.<br><br>After completion of the first part, the students will be able to understand Computer Networks basics, network types, layered communication models and protocols. The contents have been organized in such a way as to form the base for learning the concepts to be taught in the next part. The assimilation of the networking concepts will enable the students to apply them for solving practical problems.<br><br>After completion of this part, the students will be familiar with networking, routing, switching, and Setting up of networks from scratch, major protocols involved in communication and their configurations. Students will also be made aware of the state of the art areas in case they would like to pursue this course in future. | | |
| **Text Book(s)** | 1. James F. Kurose and Keith W. Ross, Computer Networking: A Top-Down Approach Featuring the Internet, 6th Edition, Pearson, 2012, ISBN: 0132856204.<br>2. T. Lammle, CCNA Cisco Certified Network Associate Deluxe Study Guide, 6th Edition, Sybex, 2011, ISBN: 978-0-470-90108-3. | | |
| **Reference Material** | 1. Andrew S. Tanenbaum, David J. Wetherall, Computer Networks, 5th Edition, Prentice Hall, 2010, ISBN: 9332518742.<br>2. William Stallings, Data and Computer Communications, 10th Edition, Pearson, 2013, ISBN: 0133506487.<br>3. Behrouz A. Forouzan, Data Communication and Computer Networks, 5th Edition, McGraw-Hill, 2012, ISBN: 0073376221.<br>4. R. Perlman, Interconnections: Bridges, Routers, Switches, and Internetworking Protocols, 2nd Edition, Addison-Wesley, 1999, ISBN: 0201634481. | | |