Course Title	**Computer Networks Lab**
Course Code	**CC-313L**
Credit Hours	1
Category	Computing Core
Prerequisite	None
Co-Requisite	None
Follow-up	None
Course Description	Introduction to Networks and its Components: Network components, transmission modes, types of connections, physical and logical topologies, performance evaluation parameters for topologies, network types (PAN, LAN, WAN, MAN), data transmission media, guided media vs unguided media. Network Addressing: Physical and logical addresses, IP addressing, class-full addresses, private addresses, loopback addresses, IP Sub-netting, and super-netting. Setting Network Connectivity: Different types of cables available for setting up a small Local Area Network, connectors, cross-over, and straight through cables etc. mastering Ethernet cables (using pin arrangement of T568-A or T568-B) and checking their correctness, Setting up the point-to-point connection between 2 computers. Assigning the IP address to computers and finding out the IP addresses using the ipconfig command. Test connectivity between computers using ping command. Sharing data between computers. Setting Activity Directory on Domain Controller: Installation of Activity Directory on Domain Controller, Manage and Active Directory Forest and domain. Design and OU, Identify GP requirement for OU. Design an OU structure to delegate authority. Design a security group strategy, define administrative access requirements, define user roles. Specify account requirements for users, computers, administrators, and services. Design an AD naming strategy, Design a strategy for GP implementation. Design the Administration of GPOs. Installation and configuration of the File server. Installation and configuration of Quota server. Setting Additional Domain Controller: Installation of Activity Directory on Additional domain controller, Domain synchronization between Domain Controller and Additional domain controller. AD users and group management in Client and Server environment. Design a user and computer authentication strategy. Design a user and computer account strategy. Installation and configuration of Domain name server. Configuration of forward lookup zone. Configuration of reverse looks up zone. Concept of AD-integrated zone, primary zone, secondary zone, and stub zone. Linux OS: Installation of Linux OS and concept of file systems. Usage of basic commands. User management and its permissions. Server Management: Installation of various servers and their configuration like a Samba file server in a workgroup. Samba file server in a domain environment. DHCP server, DNS server, NAT server. Networking Devices and Protocols: Exposition and discussion of various networking devices including Hubs, Switches, Routers, Bridges, Gateways, Repeaters, Amplifiers, Network Interface Cards, Modems, Wireless access points, and BRouters. Exposition and discussion of different protocols working at each layer of OSI and TCP/IP Model. PPP, ARP, RARP, ICMP, UDP, TCP, TELNET, BOOTP, SMTP, SMB, NETBIOS, Exposition, and discussion of well-known services and ports. Wireless Access Points: Installation and configuration of WAP,

	Installation, and configuration of wireless Router, manageable and non-manageable Cisco switches, the configuration of manageable Cisco switches, concept and configuration of VLAN, switch modes, and operations. Installation, configuration, sharing, and managing printing quota for users of network printers. Network Commands: Understanding and practicing various networking commands, Ping (ICMP, Echo request, TTL, RTT), Traceroute, Finger, Hostname, Telnet, Netstat, Nslookup, Route, whois, ipconfig/ ifconfig, pathping, arp, rarp and netstat, etc. Data backup technique and procedures. Network Simulation: Setting up WAN on the simulator, identifying necessary devices to build a WAN, learning the configuration of the router to connect at least 2 LANs, learning static and dynamic routing protocols, understanding and implementing RIP (Routing Information Protocol), understanding and implementing IGRP, ACL's configuration on routers.
Text Book(s)	T. Lammle, CCNA Cisco Certified Network Associate Deluxe Study Guide, 6th Edition, Sybex, 2011, ISBN: 978-0-470-90108-3.
Reference Material	R. Perlman, Interconnections: Bridges, Routers, Switches, and Internetworking Protocols, 2nd Edition, Addison-Wesley, 1999, ISBN: 0201634481.