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| **Course – 62 Title: Network Routing and Switching** |  |
| **Course No.: CCE 415 Credit : 3.00 Contact Hours: 3** | **Total Marks: 100** |

**11.1 Rationale:**

Computer Engineers should be competent in Routing and Switching and this course will develop then mainly important for designing a network diagram for any kind of organization, internet connectivity, Intranet communication, Network Architecture etc.

**11.2 Objectives:**

Students mainly understand a practical concept about routing and switching. After that they are confident about to configure and manage whole network via router and switch using IP addressing and so far they can be work in ISP Company and complex data channel recovery.

* Understanding on configuring LAN communication
* To configuring Cisco Router
* Apply WAN Technologies
* Network Routing process and packet delivery
* Telnet
* Router security
* Static and Dynamic Routing
* Difference kind of Routing Protocol
* configuring VLAN communication
* Access control List

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| **11.3**  **Learning Outcomes** | **11.4**  **Course Content** | **11.5**  **Teaching Strategy/ Learning Experience** | **11.6 Assessment Strategy** |
| List the layers, Identify Networking application,  Understand Voice and Video communication. | Operation of Data Networks: Purpose and functions of network devices, OSI and TCP/IP models , Common networking applications , Impact of voice and video on a network | Brainstorming, Case Studies, Group Assignment. | Discussion, Essay, |
| Illustrate Topologies, Interpret Network Route. | Implementing a small switched network: Layer 2 LAN technologies, Network segmentation and traffic management , | Group Assignment, Panel Discussion, Problem based Learning | Matching Type, Peer-Rating |
| Sequence the Cisco Operation. Show Switching Security. Understand IP Addressing. Identify NAT Operations. | Basic switch and operation of Cisco switches, Implement basic switch security, Implementing an IP addressing scheme: Assignment of valid IP addresses in a network, Introduction to NAT, | Problem Based Learning, Project, Inquiry –based Learning | Practical Exam, Matching Type |
| Define DNS. Find Public and Private IP. Demonstrate DHCP and DNS. | Introduction to DNS , Private & Public addressing , Using Cisco SDM for DHCP and DNS | Group Assignment ,Panel Discussion | Observation |
| Design Network Diagram. Compare Static and Dynamic Routing. Understanding Routing Protocol, Classify Routing protocol Technique. | Routing: WANs and Routers, Introduction to Routers, Configuring a Router, Learning About Other Devices, Managing Cisco IOS Software, Routing and Routing Protocols, Distance Vector Routing Protocols. TCP/IP Suite Error and Control Messages ,Basic Router Troubleshooting, Intermediate TCP/IP | Problem-based Learning, Demonstration, Project  /Assignment | Group Exercise, Observation, Inventories |
| Design a complete network Using Standard ACL or Time Based ACL | ,Access Control Lists ,VPN, Case Study – Router Case Study | Problem-based Learning, Demonstration, Project  /Assignment | Group Exercise, Observation, Inventories |

**RECOMMENDED BOOKS AND PERIODICALS**

**Text Books**:

1. Cisco Switching , Black Book Writer: Hanson Nottingham
2. CCNP Routing and Switching Writer: Kevin Wallace
3. CCNA Cisco Certified Network Associate Study Guide Writer: Todd Lammle