COURSE DESCRIPTION
Students interconnect CISCO networking devices in a small branch office network environment. Concepts such as Virtual Local Area Network, Spanning-Tree Protocol, Internet Protocol (IP) Routing, Variable Length Subnet Masking (VLSM), Route Summarization, Open Shortest Path (OSPF), along with other advance concepts of LAN Switching and troubleshooting technique are covered.

SPECIFIC OBJECTIVES
Upon successful completion of this course students will be able to
1) categorise the enhanced switching technologies;
2) configure, verify and troubleshoot Virtual Local Area Networks (VLANs);
3) construct, confirm and troubleshoot trunking on Cisco Switches;
4) configure, verify and troubleshoot VLAN Trunk Protocol (VTP), Rapid Spanning Tree Protocol (RSTP) and RSTP operations;
5) interpret the output of various show and debug commands to verify the operational status of a CISCO switched network; and
6) implement basic switch security.

COURSE CONTENT
I. Virtual LANs
   A. Trunking and its Protocols
   B. Configuration
   C. Verification

II. Spanning Tree Protocol
   A. Rapid
   B. Configuration
   C. Verification

III. Troubleshooting LAN Switches
   A. Generalized methodologies
   B. Switching Data Plane

IV. IP Routing
   A. Static and Connected Routes
   B. Advance
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C. Addressing  
D. Subnetting  
E. Directly Connected Subnets  
F. Static Routes

V. VLSM and Routing Summarization  
A. Manual Route  
B. Discontinuous Classful Networks

VI. IP Access Control List  
A. Standard  
B. Extended  
C. Advances in managing configuration  
D. Additional topics

VII. Troubleshooting IP Routing  
A. Ping and trace commands  
B. Packet forwarding process  
C. Tools and tips

VIII. Routing Protocol Theory  
A. Dynamic  
B. Distance vector features  
C. Link-state features

IX. OSPF  
A. Protocol  
B. Operation  
C. Configuration

X. EIGRP  
A. Operations  
B. Configuration  
C. Verification

XI. Troubleshooting Routing Protocol (TRP)  
A. Problems  
B. Enabled interface

XII. Point-To-Point Wide Area Networks (WANs)  
A. Configuration  
B. Troubleshooting serial links

XIII. Frame Relay Concepts  
A. Addressing  
B. Network Layer Concerns
Course Outline
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ASSESSMENT

Tests..................................................30%
Cases..................................................20%
Project ..............................................20%
Final Examination.................................30%
Total....................................................100%

REQUIRED TEXT

SUPPLEMENTARY READINGS/MATERIALS

JOURNALS
LAN times
Linux Journal
Network Magazine
Wired Magazine

WEBSITE
http://www.nsrc.org/networks/technologies.html (Networking Technologies)