M.S. in Telecommunication Systems

Learning Outcomes

1.  
   a. Learning Goal: Students should be able to describe the principles of data delivery via Internet Protocol (IP) routing and the router operations needed to implement them.
   b. Learning Outcome: Students will be able to list all IP header fields and describe the purpose of each. Students will be able to describe router operations including packet reception, IP prefix lookup in the route table, layer 2 header generation, and packet retransmission.

2.  
   a. Learning Goal: Students in the M.S. in Telecommunications Systems program should be able to discuss in detail the structure of U.S. voice telecommunications network, services offered, carriers involved, and key legislative limitations in the telecommunications market.
   b. Learning Outcome: Students will be able to describe in detail the key regulatory results (in particular, the Modified Final Judgment of 1984 and the Telecommunications Act of 1996) and how these have affected the telecom marketplace and services offered.

3.  
   a. Learning Goal: Student should be able to explain the purpose and operations of adjunct Internet protocols such as ARP, ICMP, DNS, RIP, OSPF and BGP.
   b. Learning Outcome: Student will be able to write clear definitions of ARP, ICMP, DNS, RIP, OSPF and BGP and illustrate their use in protocol diagrams. Students will be able to draw diagrams of packet headers and packet flows for each protocol, illustrating capabilities of each.

4.  
   a. Learning Goal: The student should be able to describe important aspects of IEEE 802.11 wireless LAN networks, such as CSMA/CA access, addressing, operational modes and encryption methods.
   b. Learning Outcome: Students will describe 802.11 CSMA/CA access methods, specific details of WEP and WPA encryption, detailed operational modes.

5.  
   a. Learning Goal: The student should be able to describe the methods for providing Quality-of-Service routing on IP networks.
   b. Learning Outcome: Students will be able to write a clear definition of Quality-of-Service routing. Students will be able to clearly describe the technologies (IP precedence, MPLS, RSVP) used to provide differentiated quality of service in IP networks.

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