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| **ELEMENT** | **CONTENT** |
| DEPARTMENT | CIS |
| AUTHOR (S) | Jack Skoda |
| COURSE NUMBER | **CIS 2151** |
| COURSE TITLE | **Computer Networks I** |
| SHORT TITLE | Networks I |
| COURSE LEVEL | 2000 |
| DATE CREATED |  |
| CHECKED/CHANGED | 10/2/2017 |
| PREREQUISITES | C- or better in CIS 2025, 2261, or 2271 |
| COREQUISITES |  |
| RESTRICTIONS |  |
| SPECIAL FEES | No |
| CREDITS | 4 |
| HOURS | 3 hours of lecture, 2 hours of lab per week |
| SEMESTER | Spring |
| COURSE DESCRIPTION | This course introduces the student to network protocols and covers physical, data link, network, transport, and application layer protocols. The TCP/IP protocol suite is discussed in detail. Topics include Ethernet, connectionless protocols, connection-oriented protocols, and application protocols such as DNS, DHCP, and HTTP. Students learn about both hardware and software troubleshooting tools, security issues, and current topics such as IPv6. Hands-on experience working with networking equipment and use of network simulation tools is used throughout the course. |
| SUGGESTED TEXTS | *Cisco CCENT/CCNA*; Wendell Odom |
| OPTIONAL TEXTS |  |
| COURSE OUTCOMES | The successful student will be able to:   1. Install and troubleshoot small to medium Ethernet networks 2. Understand networking protocols from the physical layer through the transport layer 3. Understand cabling types, connectors, and proper termination 4. Use network protocol analyzers to analyze network traffic 5. Understand the basic fundamentals of WANs 6. Understand various networking components including routers, switches, hubs, and firewalls 7. Understand IPv4 addressing concepts including subnet design, variable length subnet masks, and route summarization 8. Understand IPv4 services such as access control lists and network address translation 9. Understand IPv6 addressing concepts and subnetting and implement IPv6 on hosts and routers 10. Operate, troubleshoot, and repair TCP/IP networks 11. Understand LAN and switching technologies 12. Understand internetworking protocols such as HTTP, DNS, and email related protocols |
| COURSE CONTENT | 1. TCP/IP and OSI networking models 2. Network architecture 3. Fundamentals of Ethernet LANs 4. Fundamentals of WANs 5. Installing and operating Ethernet LANs and switches 6. Transport layer protocols and operation 7. Implementing Ethernet virtual LANs 8. IPv4 addressing and subnetting 9. Subnet design, VLSM, and route summarization 10. Fundamentals of routing algorithms 11. IPv4 services 12. ACLs 13. NAT 14. IPv6 addressing and implementation 15. Fundamentals of IPv6 routing |
| LAB/STUDIO OUTCOMES | The successful student will be able to:   1. Use problem-solving and teamwork to overcome real-world challenges 2. Demonstrate enhanced technical writing skills 3. Recognize and use equipment currently in use in the industry |
| LAB/STUDIO CONTENT | 1. Orientation 2. Using network tools 3. TCP/IP configuration information 4. TCP and UDP protocol operation 5. Address resolution protocol and discovery 6. Packet analysis tools 7. Hands-on configuring and operating routing, switching, and wireless equipment 8. Subnetting 9. Implementing routing protocols 10. Implementing ACLs 11. IPv6 configuration and operation |
| LECTURE CAPACITY | 32 |
| LAB CAPACITY | 16 |
| GRADED OR P/NP | Graded |
| EVALUATION | Participation, quizzes, exams, homework, lab reports |
| DELIVERY METHOD | LEC, LAB |
| ROOM REQUIREMENTS | CIS lab for lab |
| AUTHOR’S NOTES |  |