| Course Title | **INTRODUCTION TO NETWORKS** |
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| Course Code | **CSC 217** |
| Course Purpose and Objectives | The course CSN 122 – Computer Networking I, is aligned with the course of CISCO Networking Academy: Introduction to Networks. The first course in the CCNA curriculum introduces the architectures, models, protocols, and networking elements that connect users, devices, applications and data through the internet and across modern computer networks -including IP addressing and Ethernet fundamentals. By the end of the course, students can build simple local area networks (LANs) that integrate IP addressing schemes, foundational network security, and perform basic configurations for routers and switches. The course is taught based on a set of modules along with their associated competencies. Each module is an integrated unit of learning that consists of content, activities and assessments that target a specific set of competencies. The size of the module will depend on the depth of knowledge and skill needed to master the competency. Some modules are considered foundational, in that the artifacts presented, while not assessed, enable learning of concepts that are covered on the CCNA certification exam. By the end of the course, students will be ready to take the external exams of CISCO Networking Academy which will take place within 10 days after the completion of their final examination. |
| Learning Outcomes | 1. Explain the advances in modern network technologies.<br>2. Implement initial settings including passwords, IP addressing, and default gateway parameters on a network switch and end devices.<br>3. Explain how network protocols enable devices to access local and remote network resources.<br>4. Explain how physical layer protocols, services, and network media support communications across data networks.<br>5. Calculate numbers between decimal, binary, and hexadecimal systems.<br>6. Explain how media access control in the data link layer supports communication across networks.<br>7. Explain how Ethernet operates in a switched network.<br>8. Explain how routers use network layer protocols and services to enable end-to-end connectivity.<br>9. Explain how ARP and ND enable communication on a network.<br>10. Implement initial settings on a router and end devices.<br>11. Calculate an IPv4 subnetting scheme to efficiently segment a network.<br>12. Implement an IPv6 addressing scheme.<br>13. Use various tools to test network connectivity.<br>14. Compare the operations of transport layer protocols in supporting end-to-end communication.<br>15. Explain the operation of application layer protocols in providing support to end-user applications.<br>16. Configure switches and routers with device hardening features to enhance security.<br>17. Implement a network design for a small network to include a router, a switch, and end devices. |
| Course Content | • Networking Today<br>• Basic Switch and End Device Configuration |

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| | • Protocols and Models<br>• Physical Layer<br>• Number Systems<br>• Data Link Layer<br>• Ethernet Switching<br>• Network Layer<br>• Address Resolution<br>• Basic Router Configuration<br>• IPv4 Addressing<br>• IPv6 Addressing<br>• ICMP<br>• Application Layer<br>• Network Security Fundamentals<br>• Build a Small Network |