COMPUTER REPAIR & NETWORKING (CRN)

Courses

CRN 126 PC Hardware Fundamentals (4)
This course introduces the skills required of entry-level information and communication technology support professionals. The curriculum covers the fundamentals of personal computer (PC) hardware; network, laptop, and printer operations; and introduces advanced concepts surrounding this continuously evolving field of work. Students in this course will practice describing the internal components of a computer, assembling computer system hardware, installing operating systems, and troubleshooting via system tools and diagnostic software. Hands-on laboratory exercises help students develop critical thinking and problem-solving skills. Additionally, this course offers preparation for the CompTIA A+ Certification Core 1 Exam.

CRN 136 PC Software Fundamentals (4)
This course provides a comprehensive overview—and introduction to advanced concepts—of computer operating systems. Students will practice installing and troubleshooting operating systems using tools and diagnostic software. Practical applications include connecting computers to the internet and sharing resources in a networked environment. Hands-on laboratory experiences help students develop critical thinking and complex problem-solving skills. Additionally, this course offers focused preparation for the CompTIA A+ Certification Core 2 Exam.

CRN 146 Fund of Computer Networking (4)
This course examines the skills necessary to design and implement functional data networks, configure and manage essential network devices, and deploy technologies that improve security, scalability, and resiliency in data networks. Hands-on laboratory exercises help students develop critical thinking and complex problem-solving skills. Additionally, this course offers focused preparation for the CompTIA Network+ Certification Exam. Prerequisites: A grade of "C" or better in CRN 126 and CRN 136.

CRN 156 Network Operating Systems I (4)
This course covers configuration of advanced Windows Server services using on-premises and hybrid technologies. Students will practice leveraging the hybrid capabilities of Microsoft Azure, migrating virtual and physical server workloads to Azure Infrastructure-as-a-Service (IaaS), and securing Azure virtual machines running Windows Server editions. This course highlights administrative tools and technologies including Windows Admin Center and PowerShell. Hands-on laboratory exercises help students develop critical thinking and complex problem-solving skills. Additionally, this course offers focused preparation for the Administering Windows Server Hybrid Core Infrastructure Certification Exam. Prerequisites: A grade of "C" or better in CRN 146

CRN 166 Network Operating Systems II (4)
This course explores Linux server administration competencies, focusing on core administrative tasks and providing a foundation for those planning to pursue work as fulltime Linux system administrators. Topics of study include key command-line concepts and enterprise-level tools—storage configuration and management; provisioning of Red Hat Enterprise Linux systems; management of security tools, including SELinux; task scheduling; management and troubleshooting of the boot process; basic system tuning; and command-line automation and productivity. Hands-on laboratory exercises help students develop critical thinking and problem-solving skills. Additionally, this course offers focused preparation for the Red Had Certified System Administrator (RHCSA) exam. Prerequisites: A grade of "C" or better in CRN 146

CRN 176 Desktop Operating Systems (4)
This course introduces administrative tasks over a wide variety of desktop operating systems. Hands-on laboratory exercises will help students develop a deeper understanding of Microsoft Windows, Linux, and macOS desktop operating systems.

CRN 186 Network Security Fundamentals (4)
This course explores the skills necessary to assess and secure enterprise environments, protect hybrid systems against emerging threats, and securely implement identity access management controls. Students will develop skills to detect and respond to security incidents while ensuring compliance with applicable laws and governance frameworks. Hands-on laboratory experiences help students develop critical thinking and problem-solving skills. Additionally, this course offers focused preparation for the CompTIA Security+ certification exam. Prerequisites: A grade of "C" or better in CRN 146

CRN 221 Intro to Enterprise Networking (2)
This course introduces the architecture, functions, components, and models of converged enterprise networks. The principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum. At the end of this course, students will be able to describe advances in modern network technologies; explain how network protocols, services, and media interact to enable communication across data networks; convert between decimal, hexadecimal, and binary number systems; and calculate an IPv4 subnetting scheme to efficiently segment networks.

CRN 226 Intro Enterprise Netwrking Lab (3)
This laboratory course compliments the CRN 221 lecture course. Laboratory exercises provide hands-on applications to understand fundamental TCP/IP network concepts. At the end of this course, students will be able to design and deploy classless, hierarchical IP address schemes; build simple, small office Ethernet networks; establish and troubleshoot basic configuration parameters on Cisco routers and switches via command-line interface (CLI); and utilize common network utilities to verify network operations. Prerequisites: A grade of “C” or better in CRN 221 or concurrent enrollment

CRN 231 Routing & Switching Essentials (2)
This course examines the architecture, components, and operation of reliable, switched networks in the enterprise. At the end of this course, students will be able to calculate IPv6 subnets to effectively segment networks; compare the operations of transport layer protocols in supporting end-to-end communication; describe device-hardening procedures for network equipment; explain how data link frames are forwarded in switched networks; and describe the purpose and operation of VLANs, inter-VLAN routing, Spanning Tree Protocol (STP), and EtherChannel. Prerequisite: A grade of “C” or better in CRN 221

CRN 236 Routing/Switching Essntls Lab (3)
This laboratory course compliments the CRN 231 lecture course. Laboratory exercises provide hands-on applications to understand the implementation, maintenance, and troubleshooting of advanced switching technologies in enterprise data networks. At the end of this course, students will be able to configure routers and switches with IPv6 addressing and device hardening features; configure inter-VLAN routed networks utilizing the IEEE 802.1q protocol; configure and troubleshoot Spanning Tree, Rapid Spanning Tree, Per-VLAN Spanning Tree, and Rapid Per-VLAN Spanning Tree protocols; and implement EtherChannel on switched links. Prerequisite: A grade of “C” or better in CRN 231 or concurrent enrollment.

CRN 240 Workplace Skills I (2)
This course prepares students to compose and present information often required of technical professionals. Students will create technical summary documents, sets of instructions, technical illustrations, and technical presentations. Students will develop a professional standard for dress, behavior, and communication appropriate for field professionals.

CRN 241 Scaling Networks (2)
This course builds upon concepts learned in earlier courses, focusing on scalability and reliability in enterprise data networks. At the end of this course, students will be able to describe characteristics and operations of Dynamic Host Configuration Protocol (DHCP), Stateless Address Autoconfiguration (SLAAC), first-hop redundancy protocols (FHRPs), switch port security, wireless local area networks (WLANs), and static routing. Prerequisite: A grade of "C" or better in CRN 231

CRN 246 Scaling Networks Lab (3)
This laboratory course compliments the CRN 241 lecture course. Laboratory experiences provide hands-on applications to understand the implementation and maintenance of technologies for scalability and reliability in enterprise data networks. At the end of this course, students will be able to implement and troubleshoot networks including Stateless Address Autoconfiguration (SLAAC), Dynamic Host Configuration Protocol (DHCP), Hot-Standby Routing Protocol (HSRP), switch port security, wireless local area networks (WLANs), and static routing configurations. Prerequisite: A grade of “C” or better in CRN 241 or concurrent enrollment

CRN 251 Connecting Networks (2)
This course explores the architecture, components, and technologies deployed often deployed in wide-area communications used in the enterprise, with a focus on security and automation. By the end of this course, students will be able to describe the implementation and operation of single-area OSPFv2, IPv4/IPv6 access control lists (ACLs), Network Address Translation (NAT), VPNs, IP Security (IPSec), Quality of Service (QoS), network management protocols, network virtualization, and network automation. Prerequisite: A grade of “C” or better in CRN 241

CRN 256 Connecting Networks Lab (3)
This laboratory course compliments the CRN 251 lecture course. Laboratory experiences provide hands-on applications to understand implementation and maintenance of technologies that enhance the reliability, security, and quality of service in enterprise data networks. By the end of this course, students will be able to configure and troubleshoot single-area Open Shortest Path First version 2 (OSPFv2), access control lists (ACLs) for IPv4 and IPv6 networks, Network Address Translation (NAT) for IPv4 networks, virtual private network (VPN) technology, Quality of Service (QoS) classification and marking, Simple Network Management Protocol (SNMP), and Syslog. Prerequisite: A grade of “C” or better in CRN 251 or concurrent enrollment

CRN 265 Workplace Skills II (2)
This course prepares students with the documents and skills required to enter the highly competitive technical support field. Students will practice composing and refining effective cover letters and resumes, participate in mock interviews, and identify professional resources and levels of industry certification. Students will practice workplace appearance, behavior, and communication appropriate for field professionals.