Note: May be taken 4 times
Transfer acceptability: CSU; UC (pending) - Credit determined by UC upon review of course syllabus.

Designed for the student who has demonstrated a proficiency in Information Technology subjects and the initiative to work independently on a particular sustained project which does not fit into the context of regularly scheduled classes.

Computer Science and Information Systems - Networking (CSNT)

Seee also CSIS - Computer Science, CSIS - Database,

CSIS - Information Technology, and CSIS - Web Technology

Contact the Computer Science and Information Systems Department for further information.
(760) 744-1150, ext. 2387
Office: ST 6
http://www.palomar.edu/csis

Associate in Arts Degrees -
AA Degree requirements are listed in Section 6 (green pages).
• Computer Network Administration with Emphasis in Cisco and Linux Management
• Computer Network Administration with Emphasis in Cisco and Microsoft Management
• Computer Network Administration with Emphasis in Microsoft and Linux Management

Certificates of Achievement -
Certificate of Achievement requirements are listed in Section 6 (green pages).
• Computer Network Administration with Emphasis in Cisco and Linux Management
• Computer Network Administration with Emphasis in Cisco and Microsoft Management
• Computer Network Administration with Emphasis in Microsoft and Linux Management

Certificates of Proficiency -
Certificate of Proficiency requirements are listed in Section 6 (green pages).
• Cisco
• Desktop Support Specialist - MCSA
• Network Engineer - MCSE

PROGRAMS OF STUDY

Cisco

The Cisco networking program is designed to teach students the skills needed to design, build, and maintain small to medium-sized networks. This provides students the opportunity to enter the workforce and/or further their education and training in the computer-networking field.

CERTIFICATE OF PROFICIENCY

Program Requirements		Units
CSNT 160	Cisco Networking Fundamentals	3
CSNT 161	Cisco Router Configuration	3
CSNT 260	Cisco Advanced Routing/Switching	3
CSNT 261	Cisco WAN Design/Support	3
TOTAL UNITS		**12**

Computer Network Administration with Emphasis in Cisco and Linux Management

This program prepares the student for employment in the field of Computer Networking. The focus is on developing skills in a combination of the network technologies produced by Cisco and Linux/Unix. Specific learning outcomes include developing team dynamics in the following skills: Network Media Installation, LAN and WAN Design, Network Management, Fundamentals of Networking

Devices, Client Hardware Repair, Network Operating Systems Installation and Configuration, Networking Device Operating Systems, Installation and Configuration, Client Operating Systems Installation and Configuration, Network Security, Remote Access, Routing Principles and Configuration, and Maintaining a Corporate Network.

A.A. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements		Units
CSNT 110	Hardware and O.S. Fundamentals	3
CSNT 111	Networking Fundamentals	3
CSNT 120	Windows Client	3
CSNT 121	Windows Server	3
CSNT 140	Linux Administration	2
CSNT 141	Linux Networking and Security	2
CSNT 160	Cisco Networking Fundamentals	3
CSNT 161*	Cisco Router Configuration	3
CSNT 180	Wireless Networking	3
CSNT 181	Hacker Prevention/Security	3
CSNT 260	Cisco Advanced Routing and Switching	3
CSNT 261	Cisco Wide Area Network Design and Support	3
CSCI 108	Survey of Computer Science	4
CSCI 130	Linux Fundamentals	2
TOTAL UNITS		**40**

* Note: CSNT 160 is a prerequisite for CSNT 161

Computer Network Administration with Emphasis in Cisco and Microsoft Management

This program prepares the student for employment in the field of Computer Networking. The focus is on developing skills in a combination of the network technologies produced by Cisco and Microsoft. Specific learning outcomes include developing team dynamics in the following skills: Network Media Installation, LAN and WAN Design, Network Management, Fundamentals of Networking Devices, Client Hardware Repair, Network Operating Systems Installation and Configuration, Networking Device Operating Systems, Installation and Configuration, Client Operating Systems Installation and Configuration, Network Security, Remote Access, Routing Principles and Configuration, and Maintaining a Corporate Network.

A.A. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements		Units
CSNT 110	Hardware and O.S. Fundamentals	3
CSNT 111	Networking Fundamentals	3
CSNT 120	Windows Client	3
CSNT 121	Windows Server	3
CSNT 160	Cisco Networking Fundamentals	3
CSNT 161*	Cisco Router Configuration	3
CSNT 180	Wireless Networking	3
CSNT 181	Hacker Prevention/Security	3
CSNT 221	Windows Infrastructure Administration	3
CSNT 230	Design Windows Active Directory & Infrastructure	2
CSNT 260	Cisco Advanced Routing and Switching	3
CSNT 261	Cisco Wide Area Network Design and Support	3
CSCI 108	Survey of Computer Science	4
CSCI 130	Linux Fundamentals	2
TOTAL		**41**

* Note: CSNT 160 is a prerequisite for CSNT 161

Computer Network Administration with Emphasis in Microsoft and Linux Management

This program prepares the student for employment in the field of Computer Networking. The focus is on developing skills in a combination of the network

technologies produced by Microsoft and Linux/UNIX. Specific learning outcomes include developing team dynamics in the following skills: Network Media Installation, LAN and WAN Design, Network Management, Fundamentals of Networking Devices, Client Hardware Repair, Network Operating Systems Installation and Configuration, Networking Device Operating Systems, Installation and Configuration, Client Operating Systems Installation and Configuration, Network Security, Remote Access, Routing Principles and Configuration, and Maintaining a Corporate Network.

A.A. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements		Units
CSNT 110	Hardware and O.S. Fundamentals	3
CSNT 111 or	Networking Fundamentals	3
CSNT 160	Cisco Networking Fundamentals	3
CSNT 120	Windows Client	3
CSNT 121	Windows Server	3
CSNT 140	Linux Administration	2
CSNT 141	Linux Networking and Security	2
CSNT 180	Wireless Networking	3
CSNT 181	Hacker Prevention/Security	3
CSNT 221	Windows Infrastructure Administration	3
CSNT 224	Active directory Services Administration	3
CSCI 108	Survey of Computer Science	4
CSCI 130	Linux Fundamentals	2

Group One Electives (Select 2 courses)		
CSNT 222	Managing a Windows Infrastructure	2
CSNT 230	Design Windows Active Directory & Infrastructure	2
CSNT 231	Design Windows Network Security	2

Group Two Electives (Select 1 course)		
CSNT 235	Microsoft Exchange Server	2
CSDB 120	SQL Database Design	2
CSDB 210	SQL Server Administration	2
TOTAL UNITS		**40**

Note: By adding CSNT 161, CSNT 260 and CSNT 261 to your Microsoft and Linux Management Emphasis you can also earn a Certificate of Proficiency in Cisco in addition to your Computer Network Administration A.A. Degree.

Desktop Support Specialist - MCSA

Desktop support specialists are qualified to successfully troubleshoot, repair and upgrade the desktop computer including hardware and software in a Windows networked environment. The courses in this certificate help prepare students to take the Microsoft exams to earn an MCSA.

CERTIFICATE OF PROFICIENCY

Program Requirements		Units
CSNT 110	Hardware and O.S. Fundamentals	3
CSNT 111	Networking Fundamentals	3
CSNT 120	Windows Client	3
CSNT 121	Windows Server	3

Electives (Select 1 course)		
CSNT 140	Linux Administration	2
CSNT 222	Managing a Windows Infrastructure	2
TOTAL UNITS		**14**

Network Engineer - MCSE

Network Engineers are qualified to effectively plan, implement, maintain, troubleshoot and support networks in a wide range of computing environments using Microsoft Windows. The courses in this certificate help students prepre to take the Microsoft exams to earn an MCSE.

CERTIFICATE OF PROFICIENCY

Program Requirements		Units
CSNT 121	Windows Server	3
CSNT 221	Windows Infrastructure Administration	3
CSNT 224	Active Directory Services Administration	3

Group One Electives (Select 1 course)		
CSNT 230	Design Windows Active Directory & Infrastructure	2
CSNT 231	Design Windows Network Security	2

Group Two Electives (Select 2 courses)		
CSNT 141	Linux Networking and Security	2
CSNT 222	Managing a Windows Infrastructure	2
CSNT 230	Design Windows Active Directory & Infrastructure	2
CSNT 231	Design Windows Network Security	2
CSNT 235	Microsoft Exchange Server	2
CSDB 210	SQL Server Administration	2
CSDB 220	SQL Server Programming	3
TOTAL UNITS		**15 - 16**

COURSE OFFERINGS

CSNT 110 Hardware and O.S. Fundamentals (3)
1½ hours lecture-3 hours lecture/laboratory
Transfer acceptability: CSU
Provides the knowledge and skills necessary to build a foundation in computer hardware and operating systems. Includes P.C. hardware and operating system fundamentals; installation, configuration and upgrading; diagnosing and troubleshooting; preventative maintenance; motherboards, processors, and memory; printers; and basic networking including network operating systems.

CSNT 111 Networking Fundamentals (3)
1½ hours lecture-3 hours lecture/laboratory
Transfer acceptability: CSU
Provides the knowledge and skills necessary to build a solid foundation in computer networking. Includes networking fundamentals, the OSI model, subnetting, features and functions of networking components, and the skills needed to install, configure, and troubleshoot basic networking hardware peripherals and protocols.

CSNT 120 Windows Client (3)
2 hours lecture-2 hours lecture/laboratory
Note: May be taken 4 times
Transfer acceptability: CSU
Provides the knowledge and skills necessary to install and configure Microsoft Windows Client on stand-alone computers and on client computers that are part of a workgroup or a domain.

CSNT 121 Windows Server (3)
2 hours lecture-2 hours lecture/laboratory
Prerequisite: A minimum grade of' 'C' in CSNT 120 and A minimum grade of 'C' in CSNT 110 and CSNT 111, or concurrent enrollment in CSNT 110 and CSNT 111
Note: May be taken 4 times
Transfer acceptability: CSU
Provides the knowledge and skills necessary to install, configure, and administer a Microsoft Windows Server in a Network. Typical network services and applications include file and print, database, messaging, proxy server or firewall, dial-in server, desktop management, and Web hosting.

CSNT 140 Linux Administration (2)
4 hours lecture/laboratory
Prerequisite: A minimum grade of' 'C' in CSCI 130
Transfer acceptability: CSU
A hands on/theory introduction to UNIX System Administration including system start up and shutdown, administration files, system security, backup procedures, and user registration. Course will cover terminal and printer administration.

CSNT 141   Linux Networking and Security   (2)
4 hours lecture/laboratory
Prerequisite: A minimum grade of' 'C' in CSNT 140
Transfer acceptability: CSU
A hands-on/theory introduction to important administration activities required to manage a Linux network configuration. Course will cover topics configuring TCP/IP, DNS, PPP, send mail, Apache Web Server and the firewall.

CSNT 160   Cisco Networking Fundamentals   (3)
1½ hours lecture-3 hours lecture/laboratory
Note: May be taken 3 times
Transfer acceptability: CSU
Emphasis on the OSI model and industry standards. Includes network topologies, IP addressing, subnet masks, basic network design and cable installation. This 70 hour course of instruction prepares the student for Cisco certification examination.

CSNT 161   Cisco Router Configuration   (3)
1½ hours lecture-3 hours lecture/laboratory
Prerequisite: A minimum grade of' 'C' in CSNT 160
Note: May be taken 3 times
Transfer acceptability: CSU
Development of knowledge and skills to install, configure, customize, maintain and troubleshoot Cisco routers and components. This 70-hour course of instruction prepares the student for Cisco certification examination.

CSNT 180   Wireless Networking   (3)
1½ hours lecture-3 hours lecture/laboratory
Prerequisite: A minimum grade of' 'C' in CSNT 110, and CSNT 111 or CSNT 160
Transfer acceptability: CSU
Provides a hands-on guide to planning, designing, installing and configuring wireless LANs that prepares students for the Certified Wireless Network Administrator (CWNA) certification. In-depth coverage of wireless networks with extensive step-by-step coverage of IEEE 802.11 b/a/g/pre-n implementation, design, security, and troubleshooting. Material is reinforced with hands-on projects at the end of each chapter from two of the principal wireless LAN vendors, Cisco and Linksys.

CSNT 181   Hacker Prevention/Security   (3)
1½ hours lecture-3 hours lecture/laboratory
Prerequisite: A minimum grade of' 'C' in CSNT 110, and CSNT 111 or CSNT 160
Transfer acceptability: CSU
In-depth analysis and hands-on experience in PC and network security concepts specific to Microsoft, Unix-based and Cisco systems. Various topics including hacker prevention and intrusion detection, firewall installation and configuration, wireless network security, disaster recovery, access control lists, identification of malicious code, cryptography and forensics. Team dynamics in a lab environment, planning, installing, and configuring various network security elements regarding hardware, software, and media. Understand and demonstrate proper planning and implementation of a secure network, document and offer training to end-users, executives, and human resources on the proper maintenance of a secure network.

CSNT 221   Windows Infrastructure Administration   (3)
2 hours lecture-2 hours lecture/laboratory
Prerequisite: A minimum grade of' 'C' in CSNT 121
Note: May be taken 4 times
Transfer acceptability: CSU
Provides the knowledge and skills necessary to install, configure, manage, and support a network infrastructure that uses the Microsoft Windows Server products.

CSNT 222   Managing a Windows Infrastructure   (2)
1½ hours lecture-1 hour lecture/laboratory
Prerequisite: A minimum grade of' 'C' in CSNT 221
Transfer acceptability: CSU
Provides the knowledge and skills necessary to administer, support, and troubleshoot networks that incorporate Microsoft Windows.

CSNT 224   Active Directory Services Administration   (3)
2 hours lecture-2 hours lecture/laboratory
Prerequisite: A minimum grade of' 'C' in CSNT 121
Note: May be taken 4 times
Transfer acceptability: CSU
Provides the knowledge and skills necessary to install, configure, and administer Microsoft Windows Active Directory Services. Also focuses on implementing Group Policy and understanding the Group Policy tasks required to centrally manage users and computers.

**CSNT 230   Design Windows Active Directory
                & Infrastructure   (2)**
1½ hours lecture-1 hour lecture/laboratory
Prerequisite: A minimum grade of' 'C' in CSNT 221, 222, and 224
Transfer acceptability: CSU
Provides the knowledge and skills necessary to design a Microsoft Windows directory services infrastructure in an enterprise network.

CSNT 231   Design Windows Network Security   (2)
1½ hours lecture-1 hour lecture/laboratory
Prerequisite: A minimum grade of' 'C' in CSNT 221, 222, and 224
Transfer acceptability: CSU
Provides the knowledge and skills necessary to design a security framework for small, medium, and enterprise networks using Microsoft Windows technologies.

CSNT 235   Microsoft Exchange Server   (2)
1½ hours lecture-1 hour lecture/laboratory
Prerequisite: A minimum grade of' 'C' in CSNT 121, 221, and 224
Transfer acceptability: CSU
Provides the knowledge and skills necessary to implement, administer, and troubleshoot information systems that incorporate Microsoft Exchange Server.

CSNT 260   Cisco Advanced Routing and Switching   (3)
1½ hours lecture-3 hours lecture/laboratory
Prerequisite: A minimum grade of' 'C' in CSNT 161
Note: May be taken 3 times
Transfer acceptability: CSU
Development of knowledge and skills to configure advanced routing protocols, Local Area Networks (LANs), and LAN switching. Design and management of advanced networks. This 70-hour course of instruction prepares the student for Cisco certification examination.

CSNT 261   Cisco Wide Area Network Design and Support   (3)
1½ hours lecture-3 hours lecture/laboratory
Prerequisite: A minimum grade of' 'C' in CSNT 260
Note: May be taken 3 times
Transfer acceptability: CSU
Development of knowledge and skills to design and configure advanced Wide Area Network (WAN) projects using Cisco IOS command set. This 70-hour course of instruction prepares the student for Cisco certification examination.

Computer Science and Information Systems - Web Technology (CSWB)

Seee also CSIS - Computer Science, CSIS - Database, CSIS - Information Technology, and CSIS - Networking

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http://www.palomar.edu/csis

Certificates of Proficiency -
Certificate of Proficiency requirements are listed in Section 6 (green pages).
• Web Developer with Emphasis in Java/Open Source
• Web Developer with Emphasis in Windows
• Web Server Administrator with Emphasis in Linux
• Web Server Administrator with Emphasis in Windows