CSIT 140   Online Social Networks   (1.5)
1 hour lecture - 1½ hours laboratory
Focuses on the utilization of social networks to connect with colleagues, customers, family, and friends as well as the dangers and benefits of online social networking. Additional focus on building professional communication channels with Facebook and Twitter utilizing third-party tools. Other social networking forms, such as online gaming and alternate lives in virtual worlds will be explored.

CSIT 150 Introduction to SQL   (3)
2½ hour lecture - 1½ hours laboratory
Transfer acceptability: CSU
Intended for individuals who want to learn how to search for and manipulate data in a database, create tables and indexes, handle security, control transaction processing, and learn the basics of how to design a database.

CSIT 160 Introduction to Oracle   (3)
2½ hours lecture - 1½ hours laboratory
Transfer acceptability: CSU
An introduction to relational database concepts including the design and creation of database structures to store, retrieve, update and display data.

CSIT 170   Visual Basic I   (4)
3½ hours lecture - 1½ hours laboratory
Transfer acceptability: CSU
Design, create, test and run computer applications using Visual Basic. Emphasis is on learning the fundamentals of the Visual Basic interface and how to solve problems using structured design logic and the sequence, decision and repetition procedural language control structure. Selected additional features of the Visual Basic interface and procedural language are included to provide a foundation for the study of more advanced courses.

CSIT 180   C# Programming I   (3)
2½ hours lecture - 1½ hours laboratory
Transfer acceptability: CSU; UC
Provides the knowledge and skills necessary to use the C# programming language in the .NET Framework. Build Windows applications and server-side programs; access data with ADO.NET; use C# with Web Forms and .NET CLR.

CSIT 270   Visual Basic II   (4)
3½ hours lecture - 1½ hours laboratory
Prerequisite: A minimum grade of 'C' in CSIT 170
Transfer acceptability: CSU
An intermediate-level programming language which provides for building special purpose Windows applications using the Graphical User Interface of Windows. Includes extensive practice using programming logic control structures in designing algorithms and a wide array of Visual Basic objects in implementing the three-step approach to building Windows applications in Visual Basic.

CSIT 280   C# Programming II   (3)
2½ hours lecture - 1½ hours laboratory
Prerequisite: A minimum grade of 'C' in CSIT 180
Transfer acceptability: CSU; UC
Provides intermediate-level knowledge and skills necessary to use the C# programming language. Topics include language syntax, data types, operators, exception handling, casting, string handling, data structures, collection classes and delegates. Programming of windows-based applications is presented along with object-oriented programming that includes classes, methods, polymorphism and inheritance. Event-driven programming is discussed along with the C# development and execution environment.

**CSIT 295   Directed Study in Information
                    Technology   (1, 2, 3)**
3, 6, or 9 hours laboratory
Prerequisite: Approval of project or research by department chairperson/director
Note: May be taken 4 times
Transfer acceptability: CSU; UC - 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)
See also CSIS - Computer Science
CSIS - Information Technology, and CSIS - Web Technology

Contact the Computer Science and Information Systems Department for further information.
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Office: MD-275
http://www.palomar.edu/csis

Associate in Science Degrees -
AS Degree requirements are listed in Section 6 (green pages).
• Computer Network Administration with Emphasis: Cisco
• Computer Network Administration with Emphasis: Microsoft
• Computer Network Administration with Emphasis: Linux

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

PROGRAMS OF STUDY

Computer Network Administration with Emphasis: Cisco

This program prepares the student for employment in the field of Computer Networking. The focus is on developing skills in a combination of the fundamental and basic network technologies produced by Cisco, Linux 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.S. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements		Units
CSNT 110	Hardware and O.S. Fundamentals	4
CSNT 111	Networking Fundamentals	4
CSNT 160	Cisco Networking Fundamentals	3
CSNT 161*	Cisco Router Configuration	3
CSCI 108	Survey of Computer Science	4
CSNT 260	Cisco Advanced Routing and Switching	3
CSNT 261	Cisco Wide Area Network Design and Support	3
CSNT 180	Wireless Networking	3
CSNT 181	Hacker Prevention/Security	3
TOTAL UNITS		**30**

* Note: CSNT 160 is a prerequisite for CSNT 161

Computer Network Administration with Emphasis: Linux

This program prepares the student for employment in the field of Computer Networking with an emphasis on the Linux Operating System. The focus is on developing skills in a combination of the network technologies produced by Linux/Unix. Specific learning outcomes include developing team dynamics in the following skills: Linux Operating System, Linux Administration and Security, Linux Scripting, 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. Linux will be the primary operating system learned.

A.S. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements		Units
CSNT 110	Hardware and O.S. Fundamentals	4
CSNT 111	Networking Fundamentals	4
CSNT 120	Windows Client	3
CSNT 121	Windows Server	3
CSNT 140	Linux Administration	3
CSNT 141	Linux Networking and Security	3
CSCI 108	Survey of Computer Science	4
CSCI 130	Linux Fundamentals	3
CSCI 132	Linux Shell Scripting	3
TOTAL		**30**

Computer Network Administration with Emphasis: Microsoft

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. 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, Active Directory, Network Infrastructure, Exchange Server, Routing Principles and Configuration, and Maintaining a Corporate Network.

A.S. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements		Units
CSNT 110	Hardware and O.S. Fundamentals	4
CSNT 111	Networking Fundamentals	4
CSNT 120	Windows Client	3
CSNT 121	Windows Server	3
CSNT 221	Windows Infrastructure Administration	3
CSNT 222	Plan and Manage a Windows Infrastructure	3
CSNT 224	Active Directory Services Administration	3
CSNT 230	Design Windows Active Directory & Infrastructure	2.5
CSCI 108	Survey of Computer Science	4
CSNT 235	Microsoft Exchange Server	3
TOTAL UNITS		**32.50**

COURSE OFFERINGS

CSNT 110   Hardware and O.S. Fundamentals   (4)
3½ hours lecture - 1½ hours laboratory
Note: *May be taken 3 times*
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   (4)
3½ hours lecture - 1½ hours laboratory
Note: *May be taken 3 times*
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)
2½ hours lecture - 2 hours 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 network.

CSNT 121   Windows Server   (3)
2½ hours lecture - 2 hours 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   (3)
2 hours lecture - 3 hours laboratory
Prerequisite: *A minimum grade of 'C' in CSCI 130*
Transfer acceptability: *CSU*
For users of Linux (or UNIX) who want to start building skills in systems administration to a level where they can attach and configure a workstation on an existing network.

CSNT 141   Linux Networking and Security   (3)
2 hours lecture - 3 hours laboratory
Prerequisite: *A minimum grade of 'C' in CSNT 140*
Transfer acceptability: *CSU*
A hands on 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)
2½ hours lecture - 2 hours laboratory
Prerequisite: *A minimum grade of 'C' in CSNT 110*
Recommended preparation: *CSNT 111*
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)
2½ hours lecture - 2 hours 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)
2½ hours lecture - 2 hours laboratory
Prerequisite: *A minimum grade of 'C' in CSNT 110, and CSNT 111 or CSNT 160*
Note: *May be taken 3 times*
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 ex-

tensive 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)
2½ hours lecture - 2 hours laboratory
Prerequisite: A minimum grade of 'C' in CSNT 110, and CSNT 111 or CSNT 160
Note: May be taken 3 times
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)
2½ hours lecture - 2 hours 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   Plan and Manage a Windows Infrastructure   (3)
2½ hours lecture - 2 hours laboratory
Prerequisite: A minimum grade of 'C' in CSNT 221
Note: May be taken 4 times
Transfer acceptability: CSU
Provides the knowledge and skills necessary to plan, manage, administer, support, and troubleshoot networks that incorporate Microsoft Windows.

CSNT 224   Active Directory Services Administration   (3)
2½ hours lecture - 2 hours 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   (2.5)**
2 hours lecture - 2 hours laboratory
Prerequisite: A minimum grade of 'C' in CSNT 221, 222, and 224
Note: May be taken 2 times
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   (2.5)
2 hours lecture - 2 hours laboratory
Prerequisite: A minimum grade of 'C' in CSNT 221, 222, and 224
Note: May be taken 2 times
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   (3)
2½ hours lecture - 2 hours laboratory
Prerequisite: A minimum grade of 'C' in CSNT 121, 221, and 224
Note: May be taken 2 times
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)
2½ hours lecture - 2 hours 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)
2½ hours lecture - 2 hours 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)
See also CSIS - Computer Science
CSIS - Information Technology, and CSIS - Networking

Contact the Computer Science and Information Systems Department for further information.
(760) 744-1150, ext. 2387
Office: MD-275
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

PROGRAMS OF STUDY

Web Developer with Emphasis in Java/Open Source

This program includes the Web page design and programming languages that allow a developer to build dynamic Web applications with emphasis in the Java/Open Source platform.

CERTIFICATE OF PROFICIENCY

Program Requirements		Units
CSWB 110	Web Site Development with XHTML	3
CSWB 120	JavaScript	3
CSWB 150	PHP with MySQL	3
CSWB 170	Java for Information Systems	2.5
CSWB 220	Advanced JavaScript and XML (AJAX)	3
Electives (Select 1 course)		
CSWB 130	Advanced Web Site Development	3
CSIT 150	Introduction to SQL	3
CSIT 160	Introduction to Oracle	3
TOTAL UNITS		**17.5**