CSIT 145 Programming for Information Systems (3)
2 hours lecture - 3 hours laboratory
Recommended Preparation: *CSIT 105 or CSIT 125*
Transfer acceptability: *CSU*
C-ID ITIS 130
Fundamental concepts of application development. Students will learn the basic concepts of program design, data structures, programming, problem solving, programming logic, and fundamental design techniques for event-driven programs. Program development will incorporate the program development life cycle; gathering requirements, designing a solution, implementing a solution in a programming language, and testing the completed application.

CSIT 146 Systems Analysis and Design (3)
(Formerly CSIT 290)
2 hours lecture - 3 hours laboratory
Transfer acceptability: *CSU; UC*
Introduction to the planning, analysis, design and implementation of modern information systems. This course covers the concepts, skills, methodologies, techniques, tools, and perspectives essential for systems analysts to successfully develop information systems.

CSIT 148 C Programming using Robots (3)
2 hours lecture - 3 hours laboratory
Recommended Preparation: *CSIT 105*
Transfer acceptability: *CSU*
Introduction to Robotics and Robotic programming using RobotC and Lego Mindstorms. Focus will be fundamental problem solving skills, project management and planning, logic and design techniques while creating behavior-based, event driven robotic programs in the C programming language.

CSIT 150 Introduction to SQL (3)
2½ hours 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 Database Management Systems using Oracle (3)
2½ hours lecture - 1½ hours laboratory
Recommended Preparation: *CSIT 105 and CSIT 125*
Transfer acceptability: *CSU*
An introduction to relational database concepts including the design and creation of database structures using the Oracle Database Management System to store, retrieve, update and display data. Additionally, database management theories and ideas are covered using the Oracle Database Management System.

CSIT 170 Visual Basic I (4)
2 hours lecture - 3 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 (3)
2 hours lecture - 3 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*
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 Technology - Networking (CSNT)

See also CSIT - Computer Science
CSIT - Information Technology, and CSIT - Web Technology

Contact the Computer Science and Information Systems Department for further information.
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http://www.palomar.edu/csit

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. 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	3
CSNT 160	Cisco Networking Fundamentals	3
CSNT 161*	Cisco Router Configuration	3
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
CSNT 280	Computer Forensics Fundamentals	3
TOTAL UNITS		**28**

* 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	3
CSCI 130	Linux Fundamentals	3
CSNT 140	Linux Administration	3
CSNT 141	Linux Networking and Security	3
CSNT 180	Wireless Networking	3
CSNT 181	Hacker Prevention/Security	3
CSNT 280	Computer Forensics Fundamentals	3
TOTAL		**25**

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. Students will be prepared to take specific industry certification exams related to Microsoft, CompTia, and Security.

A.S. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements		Units
CSNT 110	Hardware and O.S. Fundamentals	4
CSNT 111	Networking Fundamentals	3
CSNT 120	Windows Client and Microsoft Office Deployment	3
CSNT 121	Windows Server	3
CSNT 122	Windows Systems Administration	3
CSNT 124	Implementing a Microsoft Desktop Application Environment	3
CSNT 180	Wireless Networking	3
CSNT 181	Hacker Prevention/Security	3
CSNT 280	Computer Forensics Fundamentals	3
TOTAL UNITS		**28**

COURSE OFFERINGS

CSNT 110 Hardware and O.S. Fundamentals (4)
3½ hours lecture - 1½ hours 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. Maps to Comptia A+ Industry Exam.

CSNT 111 Networking Fundamentals (3)
2 hours lecture - 3 hours 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 and Microsoft Office Deployment (3)
2½ hours lecture - 2 hours laboratory
Prerequisite: *A minimum grade of 'C' in CSNT 110 and 111*
Transfer acceptability: *CSU*
Provides the knowledge and skills necessary to install and configure Microsoft Windows Client (current version) on stand-alone computers and on client computers that are part of a network. Provides the knowledge and skills to deploy Microsoft Office.

CSNT 121 Windows Server (3)
2½ hours lecture - 2 hours laboratory
Prerequisite: *A minimum grade of 'C' in CSNT 111*
Transfer acceptability: *CSU*
Provides the knowledge and skills necessary to install, configure, and administer a Microsoft Windows Server (current version) 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 122 Windows Systems Administration (3)
2 hours lecture - 3 hours laboratory
Prerequisite: *A minimum grade of 'C' in CSNT 111. Completion of, or concurrent enrollment in CSNT 110*
Transfer acceptability: *CSU*
Provides the knowledge and skills required to build, maintain, troubleshoot, and support server hardware and software technologies. Students will Identify environmental issues; understand and comply with disaster recovery and physical/software security procedures; become familiar with industry terminology and concepts; understand server roles/specializations and interaction within the overall computing environment.

See Catalog addendum at http://www.palomar.edu/catalog

CSNT 124 Implementing a Microsoft Desktop Application Environment (3)
2 hours lecture - 3 hours laboratory
Prerequisite: *A minimum grade of 'C' in CSNT 121. Completion of, or concurrent enrollment in CSNT 121*
Transfer acceptability: *CSU*
Provides the knowledge and skills necessary to design and prepare the desktop application environment. Design and implement a presentation virtualization environment, design and implement an application virtualization environment, deploy and manage the application environment, and design business continuity for the desktop and application environment.

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*
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*
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*
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)
2½ hours lecture - 2 hours 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 260 Cisco Advanced Routing and Switching (3)
2½ hours lecture - 2 hours laboratory
Prerequisite: *A minimum grade of 'C' in CSNT 161*
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*
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.

CSNT 280 Computer Forensics Fundamentals (3)
2 hours lecture - 3 hours laboratory
Transfer acceptability: *CSU*
Introduces methods used to properly conduct a computer forensics investigation beginning with a discussion of ethics, while mapping to the objectives of the International Association of Computer Investigative Specialists (IACIS) certification. Topics covered include an overview of computer forensics as a profession; the computer investigation process; understanding operating systems boot processes and disk structures; data acquisition and analysis; technical writing; and a review of familiar computer forensics tools.

Computer Science and Information Technology - Web Technology (CSWB)

See also CSIT - Computer Science
CSIT - Information Technology, and CSIT - Networking

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Associate in Science Degrees -
AS Degree requirements are listed in Section 6 (green pages).
• Information Technology

Certificates of Achievement -
Certificate of Achievement requirements are listed in Section 6 (green pages).
• Information Technology

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

PROGRAMS OF STUDY

Information Technology

This program prepares students for employment in information systems applications development in business and industry. The focus is on developing skills in programming languages, Internet, spreadsheets, databases, presentation graphics, word processing, and database design. See a counselor for additional university transfer requirements in this major.