

COURSE OFFERINGS

COMM 100 Mass Media in America (3)
3 hours lecture**Transfer acceptability:** CSU; UC – COMM 100 and 105 combined: maximum credit, one course

A multi media approach to a comparative survey of communication in 20th century America, studying the history, structure, and social impact of television, cinema, radio, journalism, and new forms of communication.

COMM 104 Principles of Public Relations (3)
3 hours lecture**Transfer acceptability:** CSU

A survey of public relations history, theories, and practices with emphasis on applications to business, public agencies and institutions. A practical approach to using the media, creating press releases, organizing and executing campaigns, and promoting favorable relations with various segments of the public.

COMM 105 Race, Gender and Media Effects (3)
3 hours lecture**Transfer acceptability:** CSU; UC – COMM 100 and 105 combined: maximum credit, one course

An analysis of the changing social and ethical issues that confront both our mass communication systems and the public. The media's role in reflecting, creating, and controlling human values, both personal and social. Examination of images of women, African-Americans, Native Americans, Asian-Americans, and Latinos in the mass media and their sociological consequences.

COMM 144 Exploring the Effects of Media on Young Children (.5)
½ hour lecture**Note:** Cross listed as CHDV 144**Transfer acceptability:** CSU

Explores the effects of media consumption on children's social-emotional, physical, and cognitive development. Research behind the risks associated with television and computer use and popular culture saturation for young children. Techniques for addressing media consumption with children, parents and families.

Computer Science and Information Systems - Computer Science (CSCI)

See also CSIS - Database, CSIS - Information Technology, CSIS - Networking, 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/cs>**Associate in Arts Degrees -**

AA Degree requirements are listed in Section 6 (green pages).

- Computer Science
- Computer Science with Emphasis in Video Gaming

Certificates of Achievement -

Certificate of Achievement requirements are listed in Section 6 (green pages).

- Computer Science
- Computer Science with Emphasis in Video Gaming

Certificates of Proficiency -

Certificate of Proficiency requirements are listed in Section 6 (green pages).

- Java Software Development
- Linux
- Mac Programming
- Video Game Artist
- Video Game Developer

PROGRAMS OF STUDY

Computer Science

Computer Science is the study and design of computer systems: both hardware and software. Computer scientists are primarily concerned with the design of algorithms, languages, hardware architectures, systems software, applications software and tools. Applications range from simple game playing to the control of space vehicles, power plants and factories, from banking machines to intelligent medical diagnosis systems. Computer Science professionals are concerned with the creation of computer and information systems for the benefit of society.

Emphasis in the Computer Science program is placed on the ability to solve problems and think independently. The program offers a foundation in data structures, computer architecture, software design, algorithms, programming languages and object-oriented programming. See a Counselor for additional university transfer requirements in this major.

A.A. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements	Units
CSCI 108 Survey of Computer Science	4
CSCI 110 Programming for Computer Science	4
CSCI 210 Data Structures	4.5
CSCI 212 Machine Organization and Assembler Language	4
CSCI 220 C Programming	4
CSCI 222 C++ and Object-Oriented Programming	4.5
CSCI 230 Java GUI Programming	3

Group One Electives (Select 3 courses)

CSCI 130 Linux Fundamentals	3
CSCI 240 Windows API Programming	4
CSCI 260 Video Game Programming I	4
CSCI 270 Mac OS Cocoa Programming	3
CSDB 140 Introduction to Oracle	3
CSIT 180 C# Programming I	3
CSIT 290 Systems Analysis and Design	4
CSNT 111 Networking Fundamentals	4

Group Two Electives (Select 1 Course)

CSCI 170 BSD Unix for Mac	3
CSCI 171 Mac OS AppleScripting	2.5
CSCI 172 Objective-C Programming for Mac	3
CSCI 271 OpenGL for Mac OS	3
CSCI 275 iPhone SDK Programming	3
CSCI 132 Linux Shell Scripting	3
CSCI 232 Java Mobile Programming	3
MATH 245 Discrete Mathematics	3

TOTAL UNITS**39.5 – 43****Computer Science with Emphasis in Video Gaming**

Computer Science is the study and design of computer systems: both hardware and software. Computer scientists are primarily concerned with the design of algorithms, languages, hardware architectures, systems software, applications software and tools. Applications range from simple game playing to the control of space vehicles, power plants and factories, from banking machines to intelligent medical diagnosis systems. Computer Science professionals are concerned with the creation of computer and information systems for the benefit of society.

Emphasis in the Computer Science program is placed on the ability to solve problems and think independently. The program offers a foundation in data structures, computer architecture, software design, algorithms, programming languages, and object-oriented programming. This program also introduces students to the video game industry, video game design and programming.

See a Counselor for additional university transfer requirements in this major.

A.A. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements	Units
CSCI 108 Survey of Computer Science	4
CSCI 110 Programming for Computer Science	4
CSCI 210 Data Structures	4.5
CSCI 212 Machine Organization and Assembler Language	4
CSCI 220 C Programming	4
CSCI 222 C++ and Object-Oriented Programming	4.5
CSCI 230 Java GUI Programming	3

Required Video Game Courses

CSCI 160 Overview of the Video Game Industry	4
CSCI 161 Video Game Design	4
CSCI 260 Video Game Programming I	4
CSCI 261 Video Game Programming II	4

Electives (select 1 course)

CSDB 140 Introduction to Oracle	3
CSIT 290 Systems Analysis and Design	4
CSNT 111 Networking Fundamentals	4

TOTAL UNITS 47 - 48

Java Software Development

The Java Software Development certificate program is designed to introduce the fundamental concepts of object-oriented programming and the Java programming language along with standard Java application programming interface (API) packages. Learn to develop applications that run on servers as well as cross-platform applications (applications that can run on PCs, PDAs, or other devices). Gain an understanding of data structures, functionality, and Java's user-friendly design tools.

CERTIFICATE OF PROFICIENCY

Program Requirements	Units
CSCI 110 Programming for Computer Science	4
CSCI 210 Data Structures	4.5
CSCI 230 Java GUI Programming	3
CSCI 232 Java Mobile Programming	3
CSWB 270 Java Servlets and JSPs	3
TOTAL UNITS	17.5

Linux

This certificate program in Linux/UNIX is designed for those currently in the computer industry who want to upgrade their skills, and for those with basic computer literacy who want to enter this fast-growing field. Fluency in Linux/UNIX can make the difference in winning a job or promotion, as more personnel directors regard knowledge and fluency in Linux/UNIX principles as key criteria for job recruitment and selection.

CERTIFICATE OF PROFICIENCY

Program Requirements	Units
CSCI 130 Linux Fundamentals	3
CSCI 132 Linux Shell Scripting	3
CSNT 140 Linux Administration	3
CSNT 141 Linux Networking and Security	3
CSWB 160 Perl Programming	2
TOTAL UNITS	14

Mac Programming

The Mac Programming certificate is designed for those wishing to explore Mac OS technologies. The Unix foundation of Mac OS, along with its powerful native application environments, cutting-edge development tools, and support of open source and open standards—make it a powerful, stable, and versatile development environment, capable of supporting development for multiple deployment targets.

CERTIFICATE OF PROFICIENCY

Program Requirements	Units
CSCI 170 BSD Unix for Mac	2
CSCI 172 Objective-C Programming for Mac	3
CSCI 270 Mac OS Cocoa Programming	3
CSCI 271 OpenGL for Mac OS	3
CSCI 275 iPhone SDK Programming	3
TOTAL UNITS	14

Video Game Artist

This certificate program introduces students to the video game industry, video game design, and the creation of both 2D and 3D artwork for video games.

CERTIFICATE OF PROFICIENCY

Program Requirements	Units
CSCI 160 Overview of the Video Game Industry	4
CSCI 161 Video Game Design	4
ARTI 246 or Digital 3D Design and Modeling	3
DT 180 or 3D Studio Max – Intro 3D Modeling/Animation	
DT 182 3D Studio Max – Adv 3D Modeling/Animation	
ARTI 220 or Motion Design	2 - 4
ARTI 247 or Digital 3D Design and Animation	
DT 184 or Real Time 3D Technical/Game Animation	
GCMW 204 Motion Graphics for Multimedia	
TOTAL UNITS	13 - 15

Video Game Artist Certificate of Proficiency is also listed under Graphic Communications - Multimedia and Web.

Video Game Developer

The Video Game Developer certificate program introduces students to the video game industry, video game design and programming.

CERTIFICATE OF PROFICIENCY

Program Requirements	Units
CSCI 160 Overview of the Video Game Industry	4
CSCI 161 Video Game Design	4
CSCI 260 Video Game Programming I	4
CSCI 261 Video Game Programming II	4
TOTAL UNITS	16

COURSE OFFERINGS

CSCI 108 Survey of Computer Science (4)
3½ hours lecture - 1½ hours laboratory

Transfer acceptability: CSU; UC – CSCI 108 and 110 combined: maximum credit, one course

An overview of the discipline of computer science including such topics as the history of computer science; machine architecture; data storage and manipulation; operating software engineering; data structures; database and information retrieval; data communications; artificial intelligence; theory of computation; social legal and ethical issues. Includes hands-on laboratory experience reinforcing the lecture material.

CSCI 110 Programming for Computer Science (4)
3½ hours lecture - 1½ hours laboratory

Prerequisite: A minimum grade of 'C' in CSCI 108

Transfer acceptability: CSU; UC

Introduces object-oriented programming and design using Java. Focuses on implementation and testing of software in a platform-independent, event-driven, graphical user interface environment. Covers basic concepts of data representation, user interface design, and software engineering.

CSCI 130 Linux Fundamentals (3)

2 hours lecture - 3 hours laboratory

Transfer acceptability: CSU

An introduction to fundamental end-user and administrative tools in Red Hat Enterprise Linux, designed for students with little or no command-line Linux or UNIX experience.

CSCI 132 Linux Shell Scripting (3)

2 hours lecture - 3 hours laboratory

Prerequisite: A minimum grade of 'C' in CSCI 130

Transfer acceptability: CSU

Intermediate concepts of shell script programming, advanced utilities, file management, and alternative editors. Includes usage of sed (stream editor), awk (a UNIX/Linux scripting language), and graphical user interfaces. Introduction to UNIX/Linux networking concepts.

CSCI 146 FORTRAN 90 for Mathematics and Science (3)

2 hours lecture - 3 hours laboratory

Prerequisite: A minimum grade of 'C' in MATH 135 or MATH 110 and 115, or a passing grade on the appropriate placement test

Note: Cross listed as Math 146

Transfer acceptability: CSU; UC

Programming in FORTRAN 90 to solve typical problems in mathematics, computer science, physical sciences, and engineering. Programming is done on a PC.

CSCI 160 Overview of the Video Game Industry (4)

4 hours lecture

Transfer acceptability: CSU

Survey of the historical, technological, business, social and psychological aspects of the video game industry. Intended for those considering a career in the video game industry, or those with a strong interest in video games and how they are made.

CSCI 161 Video Game Design (4)

4 hours lecture

Transfer acceptability: CSU

An introduction to video game design, including the study of various genres of games, and the preparation of a game design document. Intended for those considering a career in the video game industry, or those with a strong interest in video games and how they are made.

CSCI 170 BSD Unix for Mac (3)

2½ hours lecture - 1½ hours laboratory

Transfer acceptability: CSU

Introduction to BSD 4.3 UNIX (bash, bourne, tsh, csh) for command line terminal access and shell scripting on a Macintosh system.

CSCI 171 Mac OS AppleScripting (2.5)

2 hours lecture - 1½ hours laboratory

Transfer acceptability: CSU

Introduction to scripting using Apple Inc.'s AppleScript Studio. Includes hands-on laboratory experience reinforcing the lecture material.

CSCI 172 Objective-C Programming for Mac (3)

2½ hours lecture - 1½ hours laboratory

Transfer acceptability: CSU

Prepares students for application development on the iPhone and Macintosh platforms. Students should have some familiarity with a formal programming language.

CSCI 197 Topics in Computer Science (.5 - 4)

Units awarded in topics courses are dependent upon the number of hours required of the student. Any combination of lecture, laboratory, or lecture/laboratory may be scheduled by the department. Refer to Class Schedule.

Note: May be taken 4 times

Transfer acceptability: CSU; UC - Credit determined by UC upon review of course syllabus.

Topics in Computer Science. See class schedule for specific topic offered. Course title will designate subject covered.

CSCI 210 Data Structures (4.5)

4 hours lecture - 2 hours laboratory

Prerequisite: A minimum grade of 'C' in CSCI 110

Transfer acceptability: CSU; UC

A systematic study of data structures, including arrays, stacks, recursion, queues, linear and non-linear linked lists, binary trees, hashing, comparative study of searching and sorting algorithms, graphs, Huffman codes, introductory analysis of algorithms, introduction to the complexity of algorithms including big "O" notation, time and space requirements, and object-oriented design of abstract data types. Focus on object-oriented programming and its principles of objects, classes, encapsulation, inheritance and its relationship to the Java programming language. Includes hands-on laboratory experience reinforcing the lecture material.

CSCI 212 Machine Organization and Assembler Language (4)

3 hours lecture - 3 hours laboratory

Prerequisite: A minimum grade of 'C' in CSCI 110

Transfer acceptability: CSU; UC

An introduction to Assembler Language programming. Language syntax is covered, together with a study of the instruction set mnemonics, segment, index, pointer, general purpose and flag registers. A variety of memory addressing techniques will be covered, as well as stack operations, particularly those associated with passing parameters to subroutine calls. Also includes I/O to screen, printer, and disk interfaces. Emphasis will be placed on interaction between the student's code and the operating system's supplied functions for I/O to peripheral devices. Use of editor and debugging tools will also be addressed.

CSCI 220 C Programming (4)

3½ hours lecture - 1½ hours laboratory

Transfer acceptability: CSU; UC

An introduction to the C programming language emphasizing top-down design and principles of structured programming. Includes hands-on laboratory experience reinforcing the lecture material. Language syntax is covered, together with operators, standard control structures, functions, input/output, arrays, strings, file manipulation, preprocessor, pointers, structures and dynamic variables.

CSCI 222 C++ and Object Oriented Programming (4.5)

4 hours lecture - 2 hours laboratory

Prerequisite: A minimum grade of 'C' in CSCI 110 or CSCI 220

Transfer acceptability: CSU; UC

Detailed study of the C++ programming language and its support for data abstraction and object-oriented programming. Presents an introduction to the fundamental elements of object-oriented programming including encapsulation, classes, inheritance, polymorphism, templates, and exceptions.

CSCI 230 Java GUI Programming (3)

2 hours lecture - 3 hours laboratory

Prerequisite: A minimum grade of 'C' in CSCI 210

Transfer acceptability: CSU

Graphical User Interface programming using Java. Emphasizing event-driven programming and the code to create GUI components such as buttons, text area, scrollable views. Includes hands-on laboratory experience reinforcing the lecture material.

CSCI 232 Java Mobile Programming (3)

2 hours lecture - 3 hours laboratory

Prerequisite: A minimum grade of 'C' in CSCI 230

Transfer acceptability: CSU

Focus on Java programming for mobile devices, using Java's principles of objects, classes, encapsulation, inheritance, and simple graphical user interfaces suitable for various mobile technologies. Use the principles of modularity, data abstraction, abstract data types as they apply to programs developed using the Java Mobile Environment's packages. Focus on the definition, implementation, and applications of simple Java programs using this environment. Includes hands-on laboratory experience reinforcing the lecture materials.

CSCI 240 Windows API Programming (4)

3½ hours lecture - 1½ hours laboratory

Prerequisite: A minimum grade of 'C' in CSCI 220

Transfer acceptability: CSU

An introduction to the fundamental concepts of Windows programming which will enable students to develop Windows applications using a graphical user interface. Includes a detailed study of the Windows Application Programming Interface.

CSCI 242 Windows MFC Programming (3)

3 hours lecture - 2 hours laboratory

Prerequisite: A minimum grade of 'C' in CSCI 222**Transfer acceptability:** CSU

Windows programming using the WIN32 API for writing applications that use multitasking, threads, synchronization, and structured exception handling. Covers implementation of Dynamic Link Libraries (DLLs), Graphic Device Interface (GDI) optimization, and creation of Help files. Includes a detailed study of the Microsoft Foundation Class (MFC) Library. Presents techniques to add Object Linking and Embedding (OLE) functionality to Windows applications.

CSCI 260 Video Game Programming I (4)

3½ hours lecture - 1½ hours laboratory

Prerequisite: A minimum grade of 'C' in CSCI 222**Note:** May be taken 4 times; maximum of 4 completions in any combination of CSCI 260, 261**Transfer acceptability:** CSU

Introduction to the programming of video games. Course will explore 3D game development with Microsoft's DirectX 9.0. Students learn how to create a 3D game from scratch. They learn the basics of designing and using a 3D engine. Includes hands-on laboratory experience reinforcing the lecture, text, and course materials.

CSCI 261 Video Game Programming II (4)

3½ hours lecture - 1½ hours laboratory

Prerequisite: A minimum grade of 'C' in CSCI 260**Note:** May be taken 4 times; maximum of 4 completions in any combination of CSCI 260, 261**Transfer acceptability:** CSU

Builds on basic 3D game programming skills acquired during Video Game Programming I. Focuses on sound, input, networking and methods such as artificial intelligence to drive these games. Includes hands-on laboratory experience reinforcing the lecture, text and course materials.

CSCI 270 Mac OS Cocoa Programming (3)

2½ hours lecture - 1½ hours laboratory

Prerequisite: A minimum grade of 'C' in CSCI 110 or CSCI 220**Transfer acceptability:** CSU

Introduction to programming using Objective-C language, Apple's X-Code and Interface Builder for creating applications targeting the Macintosh platform with event-driven structures that support the development of graphical user interfaces. Includes hands-on laboratory experience reinforcing the lecture material.

CSCI 271 OpenGL for Mac OS (3)

2½ hours lecture - 1½ hours laboratory

Prerequisite: A minimum grade of 'C' in CSCI 270**Transfer acceptability:** CSU

Macintosh OS X Cocoa Software Development Environment. The OpenGL frameworks are geared primarily toward game development or applications that require high frame rates. OpenGL is a C-based interface used to create 2D and 3D content on Macintosh desktop computers. iPhone OS supports OpenGL drawing through the OpenGL ES framework, which provides support for both the OpenGL ES 2.0 and OpenGL ES v1.1 specifications. OpenGL ES is designed specifically for use on embedded hardware systems and differs in many ways from desktop versions of OpenGL.

CSCI 275 iPhone SDK Programming (3)

2½ hours lecture - 1½ hours laboratory

Prerequisite: A minimum grade of 'C' in CSCI 172**Transfer acceptability:** CSU

Focus on the tools and APIs required to build applications for the iPhone platform using the iPhone SDK. User interface designs for mobile devices and unique user interactions using multitouch technologies. Object-oriented design using model-view-controller pattern, memory management, and Objective-C programming language. iPhone APIs and tools including Xcode, Interface Builder and Instruments on Mac OS X.

CSCI 295 Directed Study in Computer Science (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 for a maximum of 6 units**Transfer acceptability:** CSU; UC – Credit determined by UC upon review of course syllabus

Designed for the student who has demonstrated a proficiency in computer science 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 - Database (CSDB)

See also CSIS - Computer Science, CSIS - Information Technology, CSIS - Networking, and CSIS - Web Technology

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<http://www.palomar.edu/csib>**Certificates of Proficiency -**

Certificate of Proficiency requirements are listed in Section 6 (green pages).

- Microsoft SQL Database Administrator
- Oracle Database

PROGRAMS OF STUDY**Microsoft SQL Database Administrator**

Microsoft SQL Database Administrator is a validation program that provides a reliable measure of technical proficiency and expertise in implementation and administration of Microsoft SQL Server™ databases.

CERTIFICATE OF PROFICIENCY

Program Requirements		Units
CSDB 210	SQL Server Administration	3
CSDB 220	SQL Server Programming	3
CSNT 111	Networking Fundamentals	4
CSNT 121	Windows Server	3
CSNT 221	Windows Infrastructure Administration	3
TOTAL UNITS		16

Oracle Database

Oracle is the most widely used relational database management system in the world. This certificate offers a series of courses designed to provide the fundamentals to become successful in the use of this powerful database system.

CERTIFICATE OF PROFICIENCY

Program Requirements		Units
CSDB 140	Introduction to Oracle	3
CSDB 240	Oracle DBA I	3
CSDB 241	Oracle DBA II	3
CSDB 250	Oracle Performance Tuning	3
Electives (Select 1 course)		
CSDB 150	Oracle Data Base Design	3
CSDB 260	Oracle PL/SQL Programming	3
TOTAL UNITS		15

COURSE OFFERINGS**CSDB 110 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.