**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 young 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, as well as benefits to development. Techniques for addressing media consumption with children, parents and families, and methods for effectively using media will be examined.

# Computer Science and Information Technology - Computer Science (CSCI)

**See also CSIT - Information Technology, CSIT - Networking, and CSIT - Web Technology**

Contact the Computer Science and Information Technology Department for further information.
(760) 744-1150, ext. 2387
Office: MD-275
http://www.palomar.edu/csit

### Associate in Science Degrees -
AS 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).
- Linux
- 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. 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.S. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

| **Program Requirements** | | |
|---|---|---|
| CSCI 112 | Programming Fundamentals I | 4 |
| CSCI 114 | Programming Fundamentals II | 4 |
| CSCI 210 | Data Structures | 4 |
| CSCI 212 | Machine Organization and Assembly Language | 4 |
| CSCI 222 | C++ and Object-Oriented Programming | 4 |
| **Electives (Select 2 courses)** | | |
| CSCI 130 | Linux Fundamentals | 3 |
| CSCI 230 | Java GUI Programming | 3 |
| CSCI 235 | Android Development | 3 |
| CSCI 260 | Video Game Programming I | 3 |
| CSCI 272 | Objective-C Programming for Mac | 3 |
| CSCI 275 | iOS Development | 3 |
| CSNT 111 | Networking Fundamentals | 3 |
| MATH 245 | Discrete Mathematics | 3 |
| **TOTAL UNITS** | | **26** |

## *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. 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.S. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

| **Program Requirements** | | |
|---|---|---|
| CSCI 112 | Programming Fundamentals I | 4 |
| CSCI 114 | Programming Fundamentals II | 4 |
| CSCI 210 | Data Structures | 4 |
| CSCI 212 | Machine Organization and Assembly Language | 4 |
| CSCI 222 | C++ and Object-Oriented Programming | 4 |
| **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 | 3 |
| CSCI 261 | Video Game Programming II | 3 |
| **TOTAL UNITS** | | **34** |

## *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 |
| CSNT 140 | Linux Administration | 3 |
| CSNT 141 | Linux Networking and Security | 3 |
| CSWB 160 | Perl Programming | 2 |
| **TOTAL UNITS** | | **11** |

## *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** |
|---|---|


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

| | | |
|---|---|---|
| CSCI 160 | Overview of the Video Game Industry | 4 |
| CSCI 161 | Video Game Design | 4 |
| ARTI 246 or | Digital 3D Design and Modeling | |
| DT 180 or | 3D Studio Max – Intro 3D Modeling/Animation | |
| DT 182 | 3D Studio Max – Adv 3D Modeling/Animation | 3 |
| ARTD 220 or | Motion Design | |
| ARTI 247 or | Digital 3D Design and Animation | |
| DT 184 or | Real Time 3D Technical/Game Animation | |
| GCMW 204 | Motion Graphics for Multimedia | 2 - 4 |
| **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 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 programming fundamentals; algorithms and problem solving skills and object-oriented programming.

**CSCI 112 Programming Fundamentals I (4)**
*3½ hours lecture - 1½ hours laboratory*
***Transfer acceptability:*** *CSU; UC*
Introduction to the basic concepts of Computer Science, the fundamental techniques for problem solving, and the software development process. Includes the syntax and semantics of a high-level programming language focusing on basic control structures, data types, and input/output.

**CSCI 114 Programming Fundamentals II (4)**
*3½ hours lecture - 1½ hours laboratory*
***Prerequisite:*** *CSCI 112*
***Transfer acceptability:*** *CSU; UC*
Object-oriented programming, focusing on classes, instances, methods, interfaces, encapsulation, overloading, file I/O, inheritance, polymorphism, and exception handling.

**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 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 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 and/or laboratory may be scheduled by the department. Refer to Class Schedule.*
***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)**
*3 hours lecture - 3 hours laboratory*
***Prerequisite:*** *A minimum grade of 'C' in CSCI 114*
***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 Assembly Language (4)**
*3½ hours lecture - 1½ hours laboratory*
***Prerequisite:*** *A minimum grade of 'C' in CSCI 114*
***Transfer acceptability:*** *CSU; UC*
An introduction to Assembly 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)**
*3½ hours lecture - 1½ hours laboratory*
***Prerequisite:*** *A minimum grade of 'C' in CSCI 114*
***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 114*
***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 235 Android Development (3)**
*2 hours lecture - 3 hours laboratory*
***Prerequisite:*** *A minimum grade of 'C' in CSCI 230*
***Transfer acceptability:*** *CSU*
Applied Java programming to mobile Android phones utilizing the Android Software Development Kit (SDK). Assignments and programs will specifically address the basic aspects of developing applications using the Android SDK.

**CSCI 260 Video Game Programming I (4)**
*3½ hours lecture - 1½ hours laboratory*
***Prerequisite:*** *A minimum grade of 'C' in CSCI 222*
***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*
***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 272 Objective-C Programming for Mac (3)**
*2½ hours lecture - 1½ hours laboratory*
***Prerequisite:*** *A minimum grade of 'C' in CSCI 220*
***Transfer acceptability:*** *CSU*
Prepares students for application development on the iOS platform.

**CSCI 275 iOS Development (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 iOS platform. Includes user interface designs for iOS mobile devices and unique user interactions using multitouch technologies.

**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*
***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 Technology - Information Technology (CSIT)

**See also CSIT - Computer Science**
**CSIT - Networking, and CSIT - Web Technology**

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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).
• Visual Basic

### 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.

### A.S. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

**Program Requirements**

| | | |
|---|---|---|
| CSIT 105 | Computer Concepts and Applications | 3 |
| CSIT 120 | Computer Applications | 3 |
| CSWB 110 | Web Site Development with HTML5/CSS3 | 3 |
| CSWB 120 | JavaScript | 3 |
| CSIT 150 | Introduction to SQL | 3 |
| | or | |
| CSIT 160 | Introduction to Oracle | 3 |
| CSIT 180 | C# Programming I | 3 |
| CSIT 280 | C# Programming II | 3 |
| CSWB 150 | PHP with MySQL | 3 |
| | or | |
| CSWB 210 | Active Server Pages | 3 |
| CSWB 170 | Java for Information Technology | 3 |
| | or | |
| CSIT 170 | Visual Basic I | 3 |

**Electives (Select 1 course)**

| | | |
|---|---|---|
| CSWB 130 | Mobile Web Application Development | 3 |
| CSWB 140 | Ruby on Rails Programming | 3 |
| CSWB 220 | Advanced JavaScript | 3 |
| CSNT 111 | Networking Fundamentals | 3 |
| CSIT 270 | Visual Basic II | 3 |
| **TOTAL UNITS** | | **30** |