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  
3½ hours lecture - 1½ 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  
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  
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  
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  
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  
2 hours lecture - 3 hours laboratory  
Prerequisite: A minimum grade of ‘C’ in CSCI 114  
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  
2 hours lecture - 3 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 the current version of DirectX. Students learn how to create 3D games as well as 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  
2 hours lecture - 3 hours laboratory  
Prerequisite: A minimum grade of ‘C’ in CSCI 222  
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 for Mac and iOS  
2 hours lecture - 3 hours laboratory  
Prerequisite: A minimum grade of ‘C’ in CSCI 114  
Transfer acceptability: CSU  
Prepares students for application development on the iOS platform.

CSCI 275  iOS Development  
2 hours lecture - 3 hours laboratory  
Prerequisite: A minimum grade of ‘C’ in CSCI 114  
Transfer acceptability: CSU  
Focus on the Swift programming language and 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 multicopter technologies.

CSCI 295  Directed Study in Computer Science  
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  
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).  
• Information Technology  
Certificates of Achievement -  
Certificate of Achievement requirements are listed in Section 6 (green pages).  
• Information Technology
## 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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSIT 105</td>
<td>Computer Concepts and Applications</td>
<td>3</td>
</tr>
<tr>
<td>CSIT 120</td>
<td>Computer Applications</td>
<td>3</td>
</tr>
<tr>
<td>CSWB 110</td>
<td>Web Site Development with HTML5/CSS3</td>
<td>3</td>
</tr>
<tr>
<td>CSWB 120</td>
<td>JavaScript</td>
<td>3</td>
</tr>
<tr>
<td>CSIT 150</td>
<td>Introduction to SQL</td>
<td>3</td>
</tr>
<tr>
<td>CSIT 160</td>
<td>Database Management Systems using Oracle</td>
<td>3</td>
</tr>
<tr>
<td>CSIT 180</td>
<td>C# Programming I</td>
<td>3</td>
</tr>
<tr>
<td>CSIT 280</td>
<td>C# Programming II</td>
<td>3</td>
</tr>
<tr>
<td>CSWB 150</td>
<td>PHP with MySQL</td>
<td>3</td>
</tr>
<tr>
<td>CSWB 210</td>
<td>Active Server Pages</td>
<td>3</td>
</tr>
<tr>
<td>CSWB 170</td>
<td>Java for Information Technology</td>
<td>3</td>
</tr>
<tr>
<td>CSIT 170</td>
<td>Visual Basic I</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Electives (Select 1 course)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSWB 130</td>
<td>Mobile Web Application Development</td>
<td>3</td>
</tr>
<tr>
<td>CSWB 140</td>
<td>Ruby on Rails Programming</td>
<td>3</td>
</tr>
<tr>
<td>CSWB 220</td>
<td>Advanced JavaScript</td>
<td>3</td>
</tr>
<tr>
<td>CSNT 111</td>
<td>Networking Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>CSIT 270</td>
<td>Visual Basic II</td>
<td>3</td>
</tr>
</tbody>
</table>

#### TOTAL UNITS

30

Information Technology A.A. Degree Major or Certificate of Achievement is also listed in Computer Science and Information Technology – Computer Technology.

### Course Offerings

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSIT 105</td>
<td>Computer Concepts and Applications</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Transfer acceptability:</strong> CSU; UC – no credit if taken after CSIT 104 or 110</td>
<td></td>
</tr>
<tr>
<td>CSIT 120</td>
<td>Computer Applications</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Transfer acceptability:</strong> CSU</td>
<td></td>
</tr>
<tr>
<td>CSIT 121</td>
<td>Advanced Computer Applications</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Transfer acceptability:</strong> CSU; UC</td>
<td></td>
</tr>
<tr>
<td>CSIT 125</td>
<td>Computer Information Systems</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Transfer acceptability:</strong> UC/CSU</td>
<td></td>
</tr>
<tr>
<td>CSIT 135</td>
<td>Access</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Transfer acceptability:</strong> CSU</td>
<td></td>
</tr>
<tr>
<td>CSIT 136</td>
<td>Systems Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Transfer acceptability:</strong> CSU; UC</td>
<td></td>
</tr>
<tr>
<td>CSIT 140</td>
<td>Online Social Networks</td>
<td>1.5</td>
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<tr>
<td></td>
<td><strong>Transfer acceptability:</strong> CSU</td>
<td></td>
</tr>
<tr>
<td>CSIT 145</td>
<td>Programming for Information Systems</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Transfer acceptability:</strong> CSU; ITIS 130</td>
<td></td>
</tr>
<tr>
<td>CSIT 148</td>
<td>Programming using RobotC and Mindstorms</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Transfer acceptability:</strong> CSU</td>
<td></td>
</tr>
</tbody>
</table>

**Prerequisites and Recommendations**

- A minimum grade of ‘C’ in CSIT 120
- Recommendations: CSIT 105 or CSIT 125
- **Transfer acceptability:** CSU; UC
- **Recommended Preparation:** CSIT 105

## Program Development

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 150  Introduction to SQL  
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  
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  
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  
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  
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  
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  
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)  
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CSIT - Information Technology, and CSIT - Web Technology  

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Office: MD-275  
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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

<table>
<thead>
<tr>
<th>Program Requirements</th>
<th>Units</th>
</tr>
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<tbody>
<tr>
<td>CSNT 110</td>
<td>Hardware and O.S. Fundamentals</td>
</tr>
<tr>
<td>CSNT 111</td>
<td>Networking Fundamentals</td>
</tr>
<tr>
<td>CSNT 160</td>
<td>Cisco Networking Fundamentals</td>
</tr>
<tr>
<td>CSNT 161*</td>
<td>Cisco Router Configuration</td>
</tr>
<tr>
<td>CSNT 260</td>
<td>Cisco Advanced Routing and Switching</td>
</tr>
<tr>
<td>CSNT 261</td>
<td>Cisco Wide Area Network Design and Support</td>
</tr>
<tr>
<td>CSNT 180</td>
<td>Wireless Networking</td>
</tr>
<tr>
<td>CSNT 181</td>
<td>Hacker Prevention/Security</td>
</tr>
<tr>
<td>CSNT 280</td>
<td>Computer Forensics Fundamentals</td>
</tr>
</tbody>
</table>

TOTAL UNITS 28  
* Note: CSNT 160 is a prerequisite for CSNT 161

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