Computer Information Science

The Computer Information Science (CIS) department provides training for those persons who plan to work within a technical, computer-centered environment. Because of the widespread use of computers in our society, employment opportunities are found in a multitude of different environments such as general business, communications industries, manufacturing, environmental engineering, education, medical technology, and banking and finance as well as computer information science. The program is specifically designed to provide the student with practical training which would be valuable and useful in the computer programming workplace.

Career Opportunities

Computer Operator, Computer Operations Management, Computer Training Specialist, Data Administrator
Data Control Clerk, Data Entry Operator, Documentation Clerk, Education Specialist, Electronic Graphics Artist
Information Center Specialist, Management Technical Assistant, Microcomputer Technical Support, Multimedia Specialist
Network Administrator, Network Specialist, Network Support Specialist, Production Control Clerk, Programmer
Programmer/Analyst, Programming Librarian, Quality Control Specialist, Systems Analyst, Technical Research Assistant
Technical Support Specialist, Technical Writer, User Support Specialist, Web Master, Web Page Development

Faculty

Ed Burg | Reiji Cass | Shane Thomas | Paul Tonning

Degrees and Certificates Awarded

Associate in Science, Computer Information Science
Network Specialist Certificate
Productivity Software Specialist Certificate
Web Authoring Certificate

MySQL Database Developer Certificate
Programming I Certificate
UNIX Administrator Certificate

Program Learning Outcomes

A student receiving a degree or certificate in this field will be able to:
• Evaluate information technology systems.
• Communicate information technology concepts effectively with technical and non-technical audiences.
• Analyze and discuss technical problems related to environments where information technology is utilized.
• Implement logical computational solutions including documentation for an identified use case.
• Synthesize technology with environments that satisfy business, security, fault tolerance, legal, sustainability and other requirements.

Associate Degree

To earn an Associate in Science degree with a major in Computer Information Science (07547), complete a minimum of 18 units from any of the certificate requirements or from any Computer Information Science courses and meet all Victor Valley College graduation requirements. CIS 138 (Cooperative Education) may be used as Elective credit, but may not be used to fulfill major requirements.

Transfer

For the most up-to-date information on these programs and others, visit www.assist.org. Please stop by the Transfer Center in Building 55 or make an appointment with a counselor if you have questions.

Note: Typically, majors in Computer Science require the following courses taken prior to transfer: CHEM 201, CIS 201, 202; ECON 102; MATH 226, 227, 228, 231; PHYS 201, 203, 202, H204. An alternative to the CIS transfer major that appeals to many students is Administration, with an emphasis in CIS. See Business Administration.

• **California State University, San Bernardino:**   *Computer Science major*
     Computer Systems major
     Computer Engineering major

• **University of California, Riverside:**   *Computer Science major*
     Computer Engineering major

Computer Information Science

MYSQL DATABASE DEVELOPER CERTIFICATE OF CAREER PREPARATION

The MySQL Database Developer Certificate is a high quality certification process that will provide evidence that a qualifying individual has skill in developing production relational MySQL database applications. By being certified, clients, customer, and employers are ensured that the database developer is competent and professional.

Units Required: 11.0

All of the following must be completed with a grade of "C" or better:

CIS 280	Fundamentals of Database Management Systems	3.0
CIS 96A	Structured Query Language	2.0
CIS 96B	Structured Query Language	2.0
CIS 91A	MySQL Admin A	2.0
CIS 91B	MySQL Admin B	2.0

NETWORK SPECIALIST CERTIFICATE OF CAREER PREPARATION

This certificate program prepares the student to begin a career in the computer networking field and working and administering a variety of popular network platforms including UNIX, Microsoft and Novell.

Units Required: 15.0-17.0

All of the following must be completed:

CIS 50	Computer Ethics	2.0
CIS 67	Fundamentals of Networking	3.0
CIS 90	Introduction to the UNIX Operating System	4.0

Choose one of these two options:

CIS 139	Windows XP For Power Users *or*	4.0
CIS 240A	Windows 2000 Enterprise Administration	4.0

Choose one of these two options:

CIS 261	UNIX System Administration	2.0
CIS 262	UNIX System Administration B	2.0

PROGRAMMING I CERTIFICATE OF ACHIEVEMENT (10796)

This certificate trains the student to become a programmer with some of the most popular programming such as C and Visual BASIC.

Units Required: 27.0

All of the following must be completed:

BADM 144	Business Communications	3.0
CIS 50	Computer Ethics	2.0
CIS 164	Computer Mathematics	3.0
CIS 101	Computer Literacy	4.0
CIS 105	Introduction to Systems Analysis	3.0
CIS 201	Programming Concepts and Methods I	4.0
CIS 202	Programming Concepts and Methods II	4.0

Group II - One of the following must be completed

CIS 210	Visual BASIC Programming in Visual Basic	4.0
CIS 206	Programming Java	4.0

PROGRAMMING II CERTIFICATE OF ACHIEVEMENT (07549)

Completion of this certificate makes the student well versed in most popular programming languages and ready for business and highly technical software development.

Units Required: 22.0

All of the following must be completed:

BADM 144	Business Communications	3.0
CIS 50	Computer Ethics	2.0
CIS 104	Object-oriented Software Analysis and Design	3.0
CIS 108	Assembly Language Programming	3.0
CIS 164	Computer Mathematics	3.0
CIS 203	C++ Module C	4.0

Group II - One of the following must be completed

CIS 211	Advanced VB Programming A or B or C or	4.0
CIS 206	Programming Java or	4.0
CIS 206A	Java A and	2.0
CIS 206B	Java B	2.0

PRODUCTIVITY SOFTWARE SPECIALIST CERTIFICATE OF ACHIEVEMENT (07550)

This certificate trains the student to become a well-rounded microcomputer user skilled in all the software that is common in business offices.

Units Required: 25.0

Group I - All of the following must be completed:

CIS 101	Computer Literacy or	4.0
CIS 103	Foundations of Computer Technology	4.0
CIS 280	Fund D base Mgmt Systems	3.0
CIS 111	Multimedia Presentations	4.0
CIS 136	Introduction to Internet/WWW	2.0
CIS 139 B	Windows for Power Users	4.0
BET 112	Spreadsheet: Excel for Windows A/B/C	3.0
BADM 144	Business Communications	3.0

Group II - 3 units of the following must be completed:

BET 104	Beginning Word Processing/Typing: Word for Windows A/B/C	3.0
BADM 106	Accounting on Software Applications Part A	2.0
BADM 107	Accounting on Software Applications Part B	2.0

Computer Information Science

UNIX ADMINISTRATOR CERTIFICATE OF CAREER PREPARATION

The UNIX Administrator Certificate is a high quality certification process that will provide evidence that a qualifying individual has skill in designing, implementing and maintaining UNIX and Linux based networks. By being certified, clients, customers, and employers are ensured that the UNIX administrator is well equipped to handle the day-to-day operations associated with a UNIX based network as well as the unforeseen problems that tend to arise in any network.

Units Required: 16.0		
All of the following must be completed with a grade of "C" or better:		
CIS 50	Computer Ethics	2.0
CIS 90	Introduction to the UNIX Operating System	4.0
CIS 261	UNIX System Administration	2.0
CIS 262	UNIX System Administration B	2.0
Group II: One of the following must be completed with a grade of "C" or better:		
CIS 83	Programming in Python	4.0
CIS 94	PHP Programming	4.0

WEB AUTHORING CERTIFICATE OF CAREER PREPARATION

This certificate provides the student solid training in developing web pages.

Units Required: 15.0		
All of the following must be completed:		
CIS 111	Multimedia Presentations	4.0
CIS 136	Introduction to Internet	2.0
CIS 137	Introduction to HTML	3.0
CIS 205	Javascript	4.0
CIS 50	Computer Ethics	2.0

Computer Information Science Courses

CIS 50 COMPUTER ETHICS

Units Required: 2.0	32-36 hours lecture

(Recommended Preparation: Know how to use a personal computer: functions of mouse buttons and control of mouse movement (right click, left click, single click, double click, drag-and-drop, etc.), create, open and save files, install and run applications. Type about 30 WPM to keep up with class assignments.)

This course is an introduction to the theories and issues of ethical behavior as applied to the exigencies of a rapidly changing, information-oriented, computer-driven society. Topics include ethical history, philosophies, and issues at the responsibility level of both corporate business and the individual. Various ethical theories are introduced and discussed. Numerous current and past case histories are presented.

CIS 67 FUNDAMENTALS OF NETWORKING

Units Required: 3.0	32-36 hours lecture and 48-54 hours laboratory OR 96-108 hours individualized instruction

(No prerequisite. Recommended preparation: CIS 101)

This course presents a broad overview of the fundamentals of networking computers. It discusses in some detail the various network topologies, architectures, industrial standard, standards-defining organization, and the practical use of networks. This course is designed to prepare students to take the Network+ certification exam from CompTIA.

CIS 75 INTRODUCTION TO NETWORK SECURITY: SECURITY+

Units Required: 3.0	32-36 hours lecture and 48-54 hours laboratory OR 96-108 hours individualized instruction

(No prerequisite. Recommended preparation: CIS 67)

Presents security topics covering general security scnceps, communications security, infrastructure security, basics of cryptography, operational and organizational security. Topics include hacking, viruses, cryptography, detection and prevention on both wired and wireless LANs.

CIS 80 OPERATING SYSTEMS: MAC OS X

| **Units Required: 3.0** | 32-36 hours lecture and 48-54 hours laboratory |

(No Prerequisite. Recommended preparation: Basic ability to use mouse and keyboard to navigate around a computer. Grade Option)

This course introduces the Mac OS X operating system and the applications and utilities that are included with the operating system. Topics include but are not limited to: the graphical user interface, OS X preferences, account management, spotlight searches, disk management, printing, networking, program installation and removal, system security, email, Internet access, display management, address book, calendar, instant messaging, QuickTime, music management, and support.

CIS 83 PROGRAMMING IN PYTHON

| **Units Required: 4.0** | 48-54 hours lecture and 48-54 hours laboratory |

(No Prerequisite)

Python is a popular programming language that has taken a primary role in many companies including NASA, Google, Industrial Lights and Magic. Python uses an elegant syntax, making the programs easier to write and read, which also makes it an ideal language for beginning programmers. The foundation that students achieve can be applied to digital animation programs and game programming. No prior programming experience is assumed.

CIS 90 INTRODUCTION TO THE UNIX OPERATING SYSTEM

| **Units Required: 4.0** | 48-54 hours lecture and 48-54 hours laboratory |

(No Prerequisite)

This course introduces the Unix and Linux operating systems. Topics include the history of Unix, commands and utilities, file system structure, shells, graphical user interfaces, networking, text editing and shell programming.

CIS 91A MYSQL ADMIN A

| **Units Required: 2.0** | 24-27 hours lecture and 24-27 hours laboratory |

(No Prerequisite)

This course is designed to provide students with an introduction to the MySQL relational database management system. Students will learn how to design, install, configure and secure MySQL databases. The student should have prior experience with the fundamentals of databases.

CIS 91B MY SQL ADMIN B

| **Units Required: 2.0** | 24-27 hours lecture and 24-27 hours laboratory |

(No Prerequisite)

This second course in MySQL database administration is designed to provide students with an advanced approach to current database administration issues in enterprise level databases. Topics include: transactions, multiple servers, replication, locking and administration interfaces.

CIS 94 PHP PROGRAMMING

| **Units Required: 4.0** | 48-54 hours lecture and 48-54 hours laboratory |

(No Prerequisite. Recommended preparation: MATH 90)

This course is designed to provide students with an introduction to programming web-based applications using PHP. Students will learn how to design, code and implement dynamic web sites. This course will move the student from an understanding of XHTML to the development of powerful web applications that can be deployed over the Internet.

CIS 96A STRUCTURED QUERY LANGUAGE

| **Units Required: 2.0** | 24-27 hours lecture and 24-27 hours laboratory |

(No Prerequisite)

This is the first of two courses in Structured Query Language using the MySQL database management system. Topics include concepts of relational databases and SQL, creating and using databases and performing queries.

Computer Information Science Courses

CIS 96B STRUCTURED QUERY LANGUAGE

Units Required: 2.0 | **24-27 hours lecture and 24-27 hours laboratory**

(No Prerequisite)

This is the second course in Structured Query Language using the MySQL relational database management system. Topics include: Joins, IF/Case statements, indexing, batch operations and locking strategies.

CIS 101 COMPUTER LITERACY

Units Required: 4.0 *CSU, UC* | **48-54 hours lecture and 48-54 hours laboratory**

(No prerequisite. Recommended preparation: Mouse skills: know difference between, be able to perform, and know when to utilize: left click, right click, single click, double click, and drag and drop motion. Keyboarding skills: nominal typing speeds of about 30 words per minute (WPM))

This is a survey course which provides an overview of computer technology for multi-disciplinary majors. Using laboratory projects supported by the lecture, the student gains "hands- on" familiarity with different operating systems, word processors, spreadsheets, database management systems, programming, networks and the use of the Internet

CIS 104 OBJECT-ORIENTED ANALYSIS AND DESIGN

Units Required: 3.0 *CSU* | **48-54 hours lecture**

(No prerequisite. Recommended Preparation: CIS 101.)

This is a first course in the object-oriented modeling and design, a new way of thinking about problems using models organized around real-world concepts. The fundamental object-oriented construct is the object, which combines both data structure and behavior in a single entity. Object-oriented models are useful for understanding complex problems, communicating with application experts, modeling enterprises, preparing documentation, and designing programs and databases. This course is a prerequisite to all object-oriented programming language courses for it provides a requisite baseline working knowledge of unique object-oriented concepts and structure such as classes, objects and methods, encapsulation, inheritance, polymorphism and message abstraction, and static virtual methods.

CIS 105 INTRODUCTION TO SYSTEMS ANALYSIS

Units Required: 3.0 *CSU* | **48-54 hours lecture**

Offered Spring. (No prerequisite)

Introduces the three major skills required to perform effectively as a beginner in a systems analysis environment. Defines the specific steps in the determination of new systems' requirements, system design, and the creative process used to select and make recommendations as to one or more solutions to system development.

CIS 111 MULTIMEDIA PRESENTATIONS

Units Required: 4.0 *CSU* | **48-54 hours lecture and 48-54 hours laboratory**

(No prerequisite)

Students gain experience in developing multimedia presentations while gaining an understanding of multimedia technologies. In acquiring "hands-on" experience in producing and presenting multimedia presentations, the student will also actively create audio files, full-motion, video clips, graphics, animation sequences, and the text used in the final production. Additional subjects which will be covered include the basic principles for effective communications, scripting, logical control of peripheral devices, and runtime packaging.

CIS 121 INTRODUCTION TO WEB ANIMATION

Units Required: 4.0 *CSU* | **48-54 hours lecture and 48-54 hours laboratory**

(No prerequisite. Recommended Preparation: Basic computer operational skills)

Captivating web user-interfaces and contents including animations are created using multiple tools. This is a beginning course on web animation. A number of modern tools will be introduced, such as Adobe Animate and Adobe Edge, etc.

Computer Information Science

Computer Information Science Courses

CIS 136 INTRODUCTION TO THE INTERNET

Units Required: 2.0   *CSU* | **24-27 hours lecture and 24-27 hours laboratory**

(Prerequisite CID 101. Recommended preparation: Know how to use a personal computer: functions of mouse buttons and control of mouse movement (right click, left click, single click, double click, drag-and-drop, etc.), create, open and save files, install and run applications. Type about 30 WPM to keep up with class assignments.))

This course of instruction is designed for the student or savvy business person who wants to acquire the skills needed to effectively interact and utilize the resources of the Internet and its newer component, the World Wide Web (WWW). By completing this course, a student will become well versed in the understanding and using of browsers and viewers, FTP (File Transfer Protocol), news groups, e-mail, and chat/conversation utilities. They will also be made aware of some of the other concerns relating to using the Internet, such as privacy and security issues.

CIS 137 INTRODUCTION TO HTML

Units Required: 3.0   *CSU* | **32-36 hours lecture and 48-54 hours laboratory**

(No prerequisite)

This course is designed for the student or business person who wants to acquire the skills needed to create a presence on the WWW (World Wide Web) in the form of a Web Page. The student will become conversant with HTML (Hypertext Mark-up Language) and CSS (Cascading Style Sheets) and be able to use HTML and CSS authoring (designing, implementing, and maintaining). The course will cover the creation of HTML and CSS documents.

CIS 138 COOPEATIVE EDUCATION

See Cooperative Education listing (1-8 units). *CSU*

CIS 139B WINDOWS FOR POWER USERS

Units Required: 4.0   *CSU* | **48-54 hours lecture and 48-54 hours laboratory**

(No prerequisite. Recommended preparation: CIS 101)

Students will gain experience in installing, navigating, configuring, optimizing, troubleshooting, and customizing the current version of Windows. Additional subjects which will be covered include networking, disk management, diagnostics, using the Internet, and upcoming releases of Windows.

CIS 201 PROGRAMMING CONCEPTS AND METHODS I

Units Required: 3.0   *CSU, UC* | **48-54 hours lecture**

(Corequisite CIS 201L. Recommended preparation CIS 101)

An introduction to programming using the C++ language. This course is appropriate for those wishing to learn the principles of computer programming and to gain some initial experience with C++.

CIS 201L PROGRAMMING CONCEPTS AND METHODS I LAB

Units Required: 1.0 | **48-54 hours laboratory**

(Corequisite CIS 201)

This course is the Lab portion for CIS 201 Programming Concepts and Methods I. Students are required to enroll in CIS 201 and CIS 201L at the same time.

CIS 202 PROGRAMMING CONCEPTS AND METHODS II

Units Required: 3.0   *CSU, UC* | **48-54 hours lecture**

(Prerequisites: CIS 201 minimum grade C. Corequisite: CIS 202L)

An introduction to programming using the C++ language. This course is required for the Computer Science ADT degree. The course is also appropriate for those wishing to learn the principles of computer programming and to gain some initial experience with C++.

CIS 202L PROGRAMMING CONCEPTS AND METHODS II LAB

Units Required: 1.0 | **48-54 hours laboratory**

(Corequisite: CIS 202)

This course is the Lab portion for CIS 202 Programming Concepts and Methods II. Students are required to enroll in CIS 202 and CIS 202L at the same time.

Computer Information Science

Computer Information Science Courses

CIS 205 JAVASCRIPT

Units Required: 4.0   *CSU* | **48-54 hours lecture and 48-54 hours laboratory**

(Prerequisites: CIS 201 minimum grade C)

JavaScript is the only client-side programming language for web pages on virtually all browsers. By incorporating JavaScript into HTML documents, web page contents become dynamic, customized, and interactive. When developing websites, JavaScript is a must in addition to server-side scripting, since many features are not supported on the server-side programming, such as mouseover and the likes. This course teaches students how to program the web pages using JavaScript including the Javascript language itself, the DOM (Document Object Model which is the structure upon which all web pages are based), the object based programming, and the browser event model as well as event driven programming; it also prepares students for further server-side web development. ented features in depth. Subject matter includes: designing and implementing classes, abstract data types, overloading operators, inheritance, and polymorphism.

CIS 206 PROGRAMMING JAVA

Units Required: 4.0   *CSU* | **48-54 hours lecture and 48-54 hours laboratory**

(No prerequisite)

This is a course for programming in Java. The course will cover the basics of the Java programming language and object oriented programming method. Some of the more advanced topics such as applets programming data structure implementation in Java will also be covered.

CIS 208 COMPUTER ARCHITECTURE AND ORGANIZATION

Units Required: 3.0   *CSU, UC* | **32-36 hours lecture and 48-54 hours laboratory**

(No prerequisite)

Designed to train students to understand microcomputer systems low level (hardware) organizations and architecture through assembly language programming. (Formerly CIS 108)

CIS 210 PROGRAMMING IN VISUAL BASIC

Units Required: 4.0   *CSU* | **48-54 hours lecture and 48-54 hours laboratory**

(No prerequisite)

Visual Basic is the world's most popular programming language used for application development. This course is based on the latest VB.NET. VB is an object-oriented programming language suitable not only for Windows applications, but also for Web applications. While retaining its advantages in ease of learning, efficiency at developing sophisticated applications, VB.NET has now added an array of powerful features such as Web forms, mobile controls, support for XML, full compatibility with other languages (such as C#, Visual C++, Cobol, NET), etc. Students will learn all the programming basics using VB.NET, as well as being exposed to topics such as Object-Oriented programming, Database programming, and Web programming.

CIS 240A WINDOWS ENTERPRISE ADMINISTRATION

Units Required: 4.0   *CSU* | **48-54 hours lecture and 48-54 hours laboratory**

(Prerequisite: CIS 101 or equivalent)

An introduction to operating system design and operation using Windows Enterprise version in a client/server environment. Topics include: the design and philosophy of the Windows operating system, the differences between various Windows versions, user issues in Windows such as using Windows command prompt vs. the Graphical User Interface, and basic installation issues. Emphasis will be given to comparing the differences in administering Windows enterprise to Windows Professional. Hands-on experience will be stressed.

CIS 241 MICROSOFT WINDOWS SERVER ADMINISTRATION *(Formerly CIS 240B)*

Units Required: 4.0   *CSU* | **48-54 hours lecture and 48-54 hours laboratory**

(Prerequisites: CIS 139 or 240A or equivalent and CIS 101 and CIS 67; minimum grade C)

Covers administration of the current version of Windows Server on a network. Topics include: installation, user management, security, performance issues, Active Directory, Group Policies, network printing, the system registry, backups, and setting up applications.

CIS 261 UNIX SYSTEM ADMINISTRATION

Units Required: 4.0   *CSU* | **48-54 hours lecture and 48-54 hours laboratory**

(Prerequisite: CIS 90 with a grade of 'C' or better)

UNIX system administrators are responsible for the operation of UNIX systems—the most common server platform on the Internet. Learn how to setup, manage, and maintain UNIX systems. Topics include: the role of the system administrator in an organization, UNIX variants, installation, booting and shutting down, backups, managing users.

CIS 262 UNIX SYSTEM ADMINISTRATION B

Units Required: 2.0   *CSU* | **16-18 hours lecture and 48-54 hours laboratory**

(No prerequisite)

This second UNIX system administration course covers advanced UNIX administration topics, including system security, setting up and managing Internet services such as Hypertext Transfer Protocol, File Transfer Protocol, and e-mail.

CIS 264 DISCRETE STRUCTURES

Units Required: 3.0   *CSU, UC* | **48-54 hours lecture**

(Prerequisite: MATH 90)

This course will cover logic in computer science as a tool to establish truth through various techniques of proof. The goal of this course is for us to learn formal logic as a theoretical foundation and its application to topics in discrete mathematics and computer science..

CIS 280 FUNDAMENTALS OF DATABASE MANAGEMENT SYSTEMS

Units Required: 3.0   *CSU* | **32-36 hours lecture and 48-54 hours laboratory**

(No prerequisite)

This course provides an in-depth knowledge of several different database management systems (DBMS) and an understanding of the basic relational, network, or hierarchical database structures which they use. Issues of privacy, security, protection, integrity, redundancy, distributed database concepts, data manipulation and query languages are covered. Students will learn how these concepts and facilities are implemented on common microcomputer-based DBMS products and will learn "hands-on" how these common features are implemented in a variety of such products.

Computer Information Science