

# COMPUTER INFORMATION SYSTEMS (CIS)

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## CIS 10A MICROCOMPUTER REPAIR AND SERVICE 2 UNITS

Pass/No Pass or Grade is Allowed

Fee: \$10

Recommended Preparation: RDG 56 or equivalent or through the Southwestern College multiple measures placement processes.

Lecture 1.50 hour, laboratory 1.50 hour

Offered: ALL

Provides instruction on microcomputer maintenance and service. Includes training in safety, hardware, software, computer assembly, customer relations, testing, troubleshooting, and replacing computer components. Includes operating system, applications, command line for technicians, and software diagnostics. [D] (Same as: ELEC 10A)

## CIS 10B MICROCOMPUTER HARDWARE AND SOFTWARE UPGRADE 2 UNITS

Pass/No Pass or Grade is Allowed

Fee: \$10

Recommended Preparation: CIS 10A/ELEC 10A or equivalent; RDG 56 or equivalent or through the Southwestern College multiple measures placement processes.

Lecture 1.50 hour, laboratory 1.50 hour

Offered: ALL

Covers microcomputer hardware and software installation, upgrades, maintenance, and troubleshooting. Includes monitors, hard disk, internal and external tape backup, printers, memory, Compact Disk Read-Only Memory (CD-ROM), and sound cards. Covers Disk Operating System (DOS) and Windows. [D] (Same as: ELEC 10B)

## CIS 90 INTRODUCTION TO ONLINE LEARNING 1 UNIT

Grade Only

Lecture 1 hour, laboratory 1 hour

Offered: ALL

Provides an introduction to online learning environment(s) that prepares students to become engaged and active online learners. Teaches students how to use online course environment tools, strategies, and best practices to become an effective learner in an online course. [ND]

## CIS 92 MICROSOFT OFFICE SUITE 3 UNITS

Pass/No Pass or Grade is Allowed

Fee: \$10

Lecture 2 hours, laboratory 3 hours

Offered: ALL

Provides instruction in basic microcomputer applications using Microsoft Office Suite: Microsoft Word, Excel, PowerPoint, and Access. [D]

## CIS 101 INTRODUCTION TO BUSINESS INFORMATION SYSTEMS 4 UNITS

Pass/No Pass or Grade is Allowed

Fee: \$3

Lecture 3 hours, laboratory 3 hours

Offered: FALL, SPRING

Examines and organizes information systems and technology, supporting business processes and decision making. Focuses and identifies information systems, information-based strategy, database management systems, networking, e-commerce, ethics, security, application and systems software, and hardware components. Designs and applies concepts and methods through hands-on projects developing computer-based solutions to business problems. [D; CSU; UC; C-ID ITIS 120; C-ID BUS 140] (Same as: BUS 101)

## CIS 106 INTRODUCTION TO PROGRAMMING LOGIC AND DESIGN USING PYTHON 3 UNITS

Pass/No Pass or Grade is Allowed

Fee: \$2

Recommended Preparation: CIS 101 or equivalent.

Lecture 2 hours, laboratory 3 hours

Offered: ALL

Introduces fundamental programming concepts and application development using the dynamic Python programming language. Covers popular language that meets current industry standards for learning the basic concepts of program design, data structures, programming, problem solving, programming logic, fundamental design techniques, and object-oriented programs. Uses Python that is a modern language for simple to complex cloud, data, mobile, web, desktop, graphics, and embedded application development. [D; CSU; UC; C-ID ITIS 130]

## CIS 108 PHP (PERSONAL HOME PAGE) AND MYSQL 6 UNITS

Grade Only

Fee: \$1

Lecture 5 hours, laboratory 5 hours

Offered: FALL

Covers three key components of Open Source Software (OSS), Personal Home Page (PHP), My Structured Query Language (MySQL), and jQuery (a cross-platform JavaScript library) for personal, academic, and the business environment. Focuses on PHP scripting language in conjunction with MySQL to deploy applications for the Web. Provides a structured learning environment with hands-on experience, implementing one of the most popular and cost-effective solutions for developing database driven Web pages. Covers core objectives for industry certification and is one of the primary courses in the Southwestern College Linux, Apache, MySQL, and PHP (LAMP) certificate. [D; CSU]

**CIS 109**  
**LINUX OPERATING SYSTEM AND APACHE WEB SERVER**  
**6 UNITS**

Grade Only

Fee: \$1

Recommended Preparation: CIS 108 or equivalent.

Lecture 5 hours, laboratory 5 hours

Offered: SPRING

Covers two key components of Open Source Software (OSS), Linux and Apache Web Server for the personal, academic, and the business environment. Emphasizes installation, configuration, administration, maintenance, and security aspects of the Linux Operating System in conjunction with Apache Web Server. Provides hands-on experience, implementing one of the most popular and cost-effective Web integration solutions. Covers core objectives for industry certification. [D; CSU]

**CIS 115**  
**INTRODUCTION TO PROGRAMMING USING C++**  
**4 UNITS**

Pass/No Pass or Grade is Allowed

Fee: \$1

Recommended Preparation: CIS 101 or CIS 106 or equivalent.

Lecture 3 hours, laboratory 3 hours

Offered: ALL

Introduces C++ programming methods using structured and object-oriented methodology. Covers topics including C++ language syntax, data types, pointers, functions, structures, and introduction to classes. [D; CSU; UC]

**CIS 117**  
**WINDOWS PROGRAMMING USING VISUAL BASIC**  
**4 UNITS**

Pass/No Pass or Grade is Allowed

Fee: \$1

Recommended Preparation: CIS 106 or equivalent.

Lecture 3 hours, laboratory 3 hours

Offered: SPRING

Introduces programming methods using Visual BASIC (VB.NET). Covers topics including the VB.NET Integrated Development Environment, VB.NET syntax and programming constructs of decision making, data types, events, forms, controls, and object-oriented programming techniques. [D; CSU]

**CIS 119**  
**OFFICE SUPPORT AND NETWORK TECHNICIAN**  
**6 UNITS**

Pass/No Pass or Grade is Allowed

Recommended Preparation: RDG 56 or equivalent or through the Southwestern College multiple measures placement processes.

Lecture 5 hours, laboratory 5 hours

Offered: ALL

Introduces students to entry-level and upgrade training in computer maintenance and support; hardware upgrade and expansion; office equipment maintenance and service; data, voice, and video cabling installation; and customer relations. [D; CSU] (Same as: ELEC 109)

**CIS 121B**  
**WORD PROCESSING**  
**1 UNIT**

Pass/No Pass or Grade is Allowed

Fee: \$1

Recommended Preparation: CL 120 or equivalent; RDG 54 or equivalent or through the Southwestern College multiple measures placement processes.

Lecture 1 hour, laboratory 0.50 hours

Offered: ALL

Covers lecture and hands-on introduction to applications of microcomputer word processing, including basic text editing and document formatting in business documents. [D; CSU]

**CIS 122B**  
**SPREADSHEET: SOFTWARE**  
**1 UNIT**

Pass/No Pass or Grade is Allowed

Fee: \$1

Recommended Preparation: CL 120 or equivalent.

Lecture 1 hour, laboratory 0.50 hours

Offered: FALL

Introduces electronic spreadsheets and their applications using spreadsheet software. Includes design, creation, and manipulation of spreadsheets. [D; CSU]

**CIS 123**  
**WEB DESIGN I**  
**3 UNITS**

Pass/No Pass or Grade is Allowed

Fee: \$1

Recommended Concurrent Enrollment: CIS 152.

Lecture 3 hours

Offered: FALL, SPRING

Covers creating and uploading professional quality websites using a Content Management System (CMS). Integrates images, text, styles, and themes into websites. [D; CSU; UC]

**CIS 124**  
**WEB IMAGING**  
**3 UNITS**

Pass/No Pass or Grade is Allowed

Fee: \$1

Lecture 3 hours

Offered: FALL, SPRING

Covers beginning to advanced digital imaging skills for web and gaming. Utilizes standard industry software to create and edit image assets, create vector drawings, manipulate photos, and use special effects. Explore creating graphics for web pages and animations. [D; CSU; UC]

**CIS 125**  
**ANIMATION I - MOTION GRAPHICS**  
**6.5 UNITS**

Pass/No Pass or Grade is Allowed  
 Fee: \$1

Lecture 5 hours, laboratory 5 hours  
 Offered: SPRING, SUMMER

Provides students with strong web and gaming two-dimensional animation skills in just one semester. Emphasizes creating and exporting professional quality animations which utilize drawings, photos, and text. Covers synchronizing, importing, and editing animation with sound. Explores how to create automated animations and playback control for animated shorts, mobile games, or interactive applications. Covers core objectives for industry certification. [D; CSU]

**CIS 126**  
**ANIMATION II - CODING**  
**6.5 UNITS**

Pass/No Pass or Grade is Allowed  
 Fee: \$1

Recommended Preparation: CIS 125 or equivalent.  
 Lecture 5 hours, laboratory 5 hours

Offered: ALL

Provides advanced instruction in computer animations and two-dimensional interactive video games using coding. Covers movie clip editing techniques like duplicate, combine, and hide; tests movie objects for collision effects; creates interactivity; and controls the movie flow. Teaches how to create reusable code with nested symbols, create variables, initialize and increment their values, and add movie clip scripts to customized instances. Explores writing conditional statements. Includes how to test and debug coding script. Emphasizes two-dimensional animations for use in web, applications, and gaming. Covers core objectives for industry certification. [D; CSU]

**CIS 129**  
**MULTIMEDIA PRESENTATIONS---POWERPOINT**  
**1 UNIT**

Pass/No Pass or Grade is Allowed  
 Fee: \$1

Lecture 1 hour, laboratory 0.50 hours  
 Offered: FALL, SPRING

Provides students with the skills required to use the multimedia features of Microsoft PowerPoint software. Emphasizes presentation techniques, advanced text and graphic processing, and use of multimedia peripherals. [D; CSU] (Same as: BUS 129)

**CIS 130**  
**MICROCOMPUTER DISK OPERATING SYSTEM**  
**1 UNIT**

Pass/No Pass or Grade is Allowed  
 Fee: \$1

Recommended Preparation: CL 120 or CIS 101 or equivalent.  
 Lecture 1 hour, laboratory 0.50 hours

Offered: ALL

Provides an in-depth study of computer hardware and operating system concepts. Focuses on the command line interface, colloquially referred to as DOS within a Windows system. Emphasizes problem-solving using the command line interface in the Windows environment. [D; CSU]

**CIS 133**  
**ADVANCED MICROCOMPUTER SPREADSHEETS SOFTWARE**  
**1 UNIT**

Pass/No Pass or Grade is Allowed  
 Fee: \$1

Recommended Preparation: CIS 122B or equivalent.  
 Lecture 1 hour, laboratory 0.50 hours

Offered: FALL, SPRING

Covers intermediate and advanced spreadsheet software concepts and techniques. Includes advanced capabilities of the spreadsheet software. The software package is Excel. [D; CSU]

**CIS 134**  
**MICROCOMPUTER DATABASE SOFTWARE--- ACCESS**  
**1 UNIT**

Pass/No Pass or Grade is Allowed  
 Fee: \$1

Recommended Preparation: CL 120 or equivalent; RDG 56 or equivalent or through the Southwestern College multiple measures placement processes.

Lecture 1 hour, laboratory 0.50 hours  
 Offered: FALL

Introduces microcomputer database management systems and their applications. Includes the design, creation, maintenance, and report generation of simple databases. Requires Microsoft Access software package. [D; CSU]

**CIS 137**  
**ADVANCED WORD PROCESSING SOFTWARE**  
**1 UNIT**

Pass/No Pass or Grade is Allowed  
 Fee: \$2

Recommended Preparation: CIS 121B or equivalent.  
 Lecture 0.50 hours, laboratory 1 hour

Offered: ALL

Includes the further applications of microcomputer word processing, including advanced block operations, macros, footnotes and endnotes, text columns, merge, sort and boiler plating printing, math, line drawing, tables, lists and outlines, as well as reviewing the spell check and thesaurus via the computer. [D; CSU]

**CIS 139**  
**WINDOWING ENVIRONMENT**  
**1 UNIT**

Pass/No Pass or Grade is Allowed  
 Fee: \$1

Recommended Preparation: CIS 130 or equivalent.  
 Lecture 1 hour, laboratory 0.50 hours

Offered: ALL

Introduces students to the Microsoft Windows environment. Emphasizes graphical user interface (GUI) to work with files and application software. [D; CSU]

**CIS 142**  
**NETWORKING ACADEMY FUNDAMENTALS (CISCO CERTIFICATION PREPARATION)**  
**3 UNITS**

Pass/No Pass or Grade is Allowed

Fee: \$1

Recommended Preparation: CIS 130 or CIS 139 or equivalent.

Lecture 2 hours, laboratory 3 hours

Offered: FALL, SPRING

Introduces network terminology, standards and protocols, Local Area Networks (LANs), Wide Area Networks (WANs), Open System Interconnection (OSI) models, cabling, routers, router programming, topologies, and Internet Protocol (IP). Emphasizes the use of decision-making and problem-solving techniques in applying science, mathematics, communication, and social studies concepts to solve networking problems. [D; CSU] (Same as: ELEC 142)

**CIS 144A**  
**ROUTERS AND INTERNETWORK FUNDAMENTALS (CISCO CERTIFICATION PREPARATION)**  
**3 UNITS**

Grade Only

Fee: \$1

Prerequisite: CIS 142 or ELEC 142 or equivalent.

Lecture 2 hours, laboratory 3 hours

Offered: FALL, SPRING

Introduces Local Area (LANs) and Wide Area Networks (WANs), Open System Interconnection (OSI) models, Ethernet, Token Ring, Fiber Distributed Data Interface, and Transmission Control Protocol/Internet Protocol (TCP/IP) addressing protocol, and dynamic routing. Emphasizes network administrators problem-solving techniques in applying science, mathematics, communication, and social studies concepts to solve networking problems. [D; CSU]

**CIS 144B**  
**ADVANCED ROUTERS AND LAN NETWORKING**  
**3 UNITS**

Grade Only

Fee: \$1

Prerequisite: CIS 144A or equivalent.

Lecture 2 hours, laboratory 3 hours

Offered: ALL

Introduces network switches, Local Area Network (LAN) and Virtual Local Area Network (VLAN) with an emphasis on design, configuration, troubleshooting, and maintenance. Emphasizes hands-on experience utilizing and configuring LANs, Wide Area Networks (WANs), Internetwork Packet Exchange (IPX) routing, and Interior Gateway Routing Protocol (IGRP) implementations. [D; CSU]

**CIS 144C**  
**WIDE AREA NETWORKS IMPLEMENTATION AND SUPPORT**  
**3 UNITS**

Grade Only

Fee: \$1

Prerequisite: CIS 144B or equivalent.

Lecture 2 hours, laboratory 3 hours

Offered: ALL

Introduces Wide Area Networks (WANs), Integrated Services Digital Networks (ISDNs), and Point-to-Point Protocols (PPP) and Frame Relay design and network engineering. Introduces installation, configuration, and maintenance of Wide Area Networks WANs, ISDNs, PPP and Frame Relay protocols. Emphasizes the testing, documentation, analysis, and troubleshooting of Cisco networks. [D; CSU]

**CIS 146**  
**INTRODUCTION TO STRUCTURED QUERY LANGUAGE (SQL)**  
**2 UNITS**

Pass/No Pass or Grade is Allowed

Fee: \$1

Recommended Preparation: CIS 106 or equivalent.

Lecture 2 hours, laboratory 1 hour

Offered: FALL, SPRING

Introduction to Structured Query Language (SQL) and industry strength database systems. Hands-on planning, modeling, creation, and maintenance of SQL database systems using both command line and graphical-user interface tools. The software package is MS SQL Server. [D; CSU]

**CIS 147**  
**NETWORK SECURITY**  
**3 UNITS**

Grade Only

Fee: \$1

Limitation on Enrollment: Enrollment is limited to students who have successfully completed CIS 144C or who have valid CCNA certification.

Lecture 2 hours, laboratory 3 hours

Offered: ALL

Students learn how deploy security techniques on the Cisco Internetwork Operating System (IOS) to protect network resources and mitigate network threats. Prepares students to take the Securing Cisco IOS Networks (SECUR) exam, which is one in a series of five exams that lead to the Cisco Security Specialist certification. [D; CSU]

**CIS 150**  
**INTRODUCTION TO TELECOMMUNICATIONS AND THE INTERNET**  
**1 UNIT**

Pass/No Pass or Grade is Allowed

Fee: \$1

Recommended Preparation: RDG 56 or equivalent or through the Southwestern College multiple measures placement processes.

Lecture 1 hour, laboratory 0.50 hours

Offered: FALL, SPRING

Introduces students to the uses and applications of telecommunications systems and services. Emphasizes the Internet as a major information resource and tool and provides a thorough working knowledge of the Internet, its protocols, and related services. [D; CSU]

**CIS 151**  
**RESEARCH USING THE INTERNET**  
**1 UNIT**

Pass/No Pass or Grade is Allowed

Fee: \$2

Recommended Preparation: CIS 150 or equivalent.

Lecture 1 hour, laboratory 1 hour

Offered: FALL, SPRING

Focuses on the Internet and World Wide Web as a research tool. Course content includes effective and efficient use of search engines, evaluation techniques for web resources, and MLA/APA citation formats for web resources. Emphasizes the development of Internet search strategies and how to evaluate sources. [D; CSU; UC] (Same as: LIB 151)

**CIS 152**  
**USING HTML AND CSS TO CREATE WEB PAGES**  
**3 UNITS**

Pass/No Pass or Grade is Allowed

Fee: \$1

Lecture 3 hours

Offered: ALL

Introduces Hypertext Markup Language and Cascading Style Sheets.

Provides insight on the modern coding practices used to create and format web sites that can be accessed by a variety of devices.

Includes hands-on application of universal web design and accessibility standards. [D; CSU; UC]

**CIS 153**  
**PROGRAMMING INTERNET VISUAL/MOBILE APPLICATIONS USING JAVA**  
**4 UNITS**

Grade Only

Fee: \$1

Recommended Preparation: CIS 106 and CIS 115, or equivalent.

Lecture 3 hours, laboratory 3 hours

Offered: FALL, SPRING

Introduces internet/enterprise/mobile visual applications developed using the Java language. Provides hands-on coding with the use of Java applet and language class libraries, Java Server Pages (JSP), and Java console applications. [D; CSU; UC]

**CIS 158**  
**IMAGING FOR THE WORLD WIDE WEB (PHOTOSHOP)**  
**3 UNITS**

Pass/No Pass or Grade is Allowed

Fee: \$1

Lecture 2 hours, laboratory 3 hours

Offered: ALL

Provides hands-on application of Adobe Photoshop, the industry standard in digital imaging for print and the Web. Focuses on techniques for creating and converting images to web file formats. Includes a look at image sampling, enhancement, 2D and 3D transforms, compression, restoration, and manipulation. [D; CSU]

**CIS 160**  
**DIGITAL INFORMATION SYSTEMS, THE INDIVIDUAL AND SOCIETY**  
**3 UNITS**

Grade Only

Lecture 3 hours

Offered: FALL, SPRING

Explores the interrelationships among information systems, the individual and society. Surveys the factors that influence the growth and development of technology and assesses how individuals and society respond to the challenges and consequences of the information revolution. Explores topics such as the impact of social media, privacy, maintaining a second digital persona, and the omnipresence of the information age in our everyday lives. Appropriate for both technical and non-technical majors. [D; CSU; UC]

**CIS 165**  
**JAVASCRIPT PROGRAMMING**  
**3 UNITS**

Pass/No Pass or Grade is Allowed

Recommended Preparation: CIS 101 or CIS 106 or equivalent.

Lecture 2.50 hours, laboratory 2.50 hours

Offered: FALL, SPRING

Introduces students to JavaScript programming focusing on creating interactive Web pages. Emphasizes integration with Hypertext Markup Language (HTML), writing and calling JavaScript functions, event handling, and arrays. Creates a variety of effects and how to apply skills to common business situations. [D; CSU; UC]

**CIS 166**  
**C# PROGRAMMING**  
**3 UNITS**

Pass/No Pass or Grade is Allowed

Recommended Preparation: CIS 101 or CIS 106 or equivalent.

Lecture 2.50 hours, laboratory 2.50 hours

Offered: ALL

Introduces C# programming methods using Visual C# .NET. Includes C# syntax and programming constructs of decision making, data types, member methods and properties using an object oriented approach to development, and introduction to user defined classes. [D; CSU; UC]

**CIS 167**  
**QUALITY ASSURANCE AND SOFTWARE TESTING**  
**3 UNITS**

Pass/No Pass or Grade is Allowed

Recommended Preparation: CIS 101 or CIS 106 or equivalent.

Lecture 2.50 hours, laboratory 2.50 hours

Offered: ALL

Introduces software testing techniques. Covers topics including test design, test management, testing tools requirements modeling, and automated tests suites. [D; CSU]

**CIS 169**  
**CYBERSECURITY ANALYSIS**  
**3 UNITS**

Grade Only

Recommended Preparation: CIS 177 or equivalent; CIS 182 or equivalent.

Lecture 2.50 hours, laboratory 1.50 hour

Offered: SPRING

Presents configuration and use of threat detection tools. Explains how to perform data analysis. Interprets the results to classify vulnerabilities, threats, and risks to an organization with the end goal of hardening and securing applications and systems within an organization from a vendor-neutral perspective. Survey techniques used in threat management, vulnerability management, cyber incident response, and security architectures. Prepares students for industry security analyst certifications. [D; CSU]

**CIS 170**  
**INFORMATION & COMMUNICATION TECHNOLOGY ESSENTIALS**  
**3 UNITS**

Pass/No Pass or Grade is Allowed

Recommended Preparation: RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.

Lecture 2.50 hours, laboratory 1.50 hour

Offered: ALL

Provides students with fundamental knowledge covering PC hardware and peripherals, mobile device hardware, networking and troubleshooting hardware, network connectivity issues, installing and configuring operating systems, including Windows and Linux, Mac OS X, iOS, and Android operating system configurations, security, fundamentals of cloud computing, and operational procedures. Prepares students for both CompTIA A+ Certifications. [D; CSU]

**CIS 173**  
**INTRODUCTION TO SYSTEMS ANALYSIS AND DESIGN**  
**3 UNITS**

Pass/No Pass or Grade is Allowed

Recommended Preparation: RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.

Lecture 2.50 hours, laboratory 1.50 hour

Offered: FALL, SPRING

Presents a systematic methodology for analyzing a business problem or opportunity, and determining what role, if any, computer-based technologies can play in addressing the business information needs. Includes Systems Analysis and Design methodologies that can be applied to solve business problems. [D; CSU; UC]

**CIS 176**  
**SYSTEMS AND NETWORK SECURITY ADMINISTRATION**  
**3 UNITS**

Pass/No Pass or Grade is Allowed

Recommended Preparation: RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.

Lecture 2.50 hours, laboratory 1.50 hour

Offered: ALL

Provides an introduction to server hardware and software, server architecture, server types and functions, network operating systems, server storage systems, configuring and upgrading servers, troubleshooting servers, and disaster recovery. Prepares student for industry network administration certifications. [D; CSU; C-ID ITIS 155]

**CIS 177**  
**INTRODUCTION TO INFORMATION SYSTEMS SECURITY**  
**3 UNITS**

Pass/No Pass or Grade is Allowed

Recommended Preparation: RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.

Lecture 2.50 hours, laboratory 1.50 hour

Offered: ALL

Introduces the fundamental principles and topics of Information Technology Security and Risk Management at the organizational level. Addresses hardware, software, processes, communications, applications, and policies and procedures with respect to organizational Cybersecurity and Risk Management. Prepares the student for industry security certifications. [D; CSU]

**CIS 178**  
**INTRODUCTION TO CYBERSECURITY**  
**3 UNITS**

Pass/No Pass or Grade is Allowed

Recommended Preparation: RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.

Lecture 3 hours

Offered: ALL

Emphasizes network attack methodologies with the emphasis on student use of network attack techniques, tools, appropriate defenses, and countermeasures. Introduces students to a hands-on practical approach to penetration testing measures and ethical hacking. Prepares students for industry penetration testing and ethical hacking certifications. [D; CSU; C-ID ITIS 164]

**CIS 179**  
**COMPUTER FORENSICS FUNDAMENTALS**  
**3 UNITS**

Pass/No Pass or Grade is Allowed

Recommended Preparation: RDG 158 or equivalent or through the Southwestern College multiple measures placement processes.

Lecture 2.50 hours, laboratory 1.50 hour

Offered: FALL, SPRING

Introduces student to forensics computer investigations. Includes an overview of computer forensics, the forensic computer investigation process, understanding operating systems' boot processes and disk structures, data acquisition and analysis, technical writing, and computer forensics tools. Prepares students for computer forensics industry certifications. [D; CSU; C-ID ITIS 165]

**CIS 181**  
**INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS**  
**3 UNITS**

Pass/No Pass or Grade is Allowed

Lecture 3 hours

Offered: ALL

Introduces core concepts of data and information management. Covers organizational information requirements, conceptual data modeling techniques, normalization techniques, relational and non-relational database design concepts, structured and unstructured data search techniques, database administration, and database recovery techniques. Prepares student for database industry certifications. [D; CSU; C-ID ITIS 180]



**CIS 182**  
**PYTHON PROGRAMMING FOR SECURITY ANALYSIS AND PENETRATION TESTING**  
**3 UNITS**

Grade Only

Recommended Preparation: CIS 106 or equivalent.

Lecture 2.50 hours, laboratory 1.50 hour

Offered: FALL, SPRING

Applies Python penetration testing programming techniques and cybersecurity frameworks to incorporate protection, detection, reaction, and restoration capabilities from a vendor-neutral perspective. Python is the preeminent industry language used for this type of testing. Prepares students for industry certifications. [D; CSU]

**CIS 226**  
**OPERATING SYSTEMS AND COMMAND LANGUAGES**  
**3 UNITS**

Grade Only

Fee: \$1

Recommended Preparation: CIS 101 and CIS 106, or equivalent.

Lecture 2 hours, laboratory 3 hours

Offered: FALL, SPRING

Surveys the structure and functions of modern operating systems; use of job control, commands, command language, and associated command language directives utilized to accomplish certain prespecified tasks. Uses UNIX System V as the Operating System (OS) vehicle of demonstration. [D; CSU; UC]

**CIS 239**  
**PROJECT MANAGEMENT**  
**3 UNITS**

Pass/No Pass or Grade is Allowed

Recommended Preparation: BUS 70 or equivalent; CIS 122B or equivalent.

Lecture 3 hours, laboratory 1 hour

Offered: FALL, SPRING

Focuses on the foundational concepts and skills of project management. Earns project management skills in the information technology field and builds upon the Project Management Body of Knowledge (PMBOK) guide for project management certifications exams, such as CompTIA Project+ or Certified Associate in Project Management (CAPM). [D; CSU] (Same as: BUS 239)

**CIS 240**  
**MICROSOFT OUTLOOK**  
**2.5 UNITS**

Pass/No Pass or Grade is Allowed

Lecture 2 hours, laboratory 2 hours

Offered: ALL

Introduces the concepts of office automation in today's modern office as it relates to communication, computers, and networks. Includes email with various attachments, online calendar, messaging, faxing, and contacts. Prepares students for the Microsoft Office Specialist Proficiency certificate in Microsoft Outlook. [D; CSU] (Formerly: BUS 240)

**CIS 255**  
**WEB SEARCH ENGINE VISIBILITY**  
**2 UNITS**

Pass/No Pass or Grade is Allowed

Recommended Preparation: CL 120 or equivalent; RDG 56 or equivalent or through the Southwestern College multiple measures placement processes.

Lecture 2 hours, laboratory 1 hour

Offered: SPRING

Covers how to get your website top placement with web searches. Introduces search engine marketing, including strategies, multimedia, and portable devices. Includes hands-on training with target keywords, measurement, and optimization. Practices the emerging social media like blogs, auctions, social networks, and advanced search. [D; CSU]

**CIS 256**  
**WEB DESIGN II**  
**3 UNITS**

Pass/No Pass or Grade is Allowed

Recommended Preparation: CIS 123 or equivalent.

Lecture 2 hours, laboratory 3 hours

Offered: ALL

Provides an advanced-level creation of interactive, responsive, and multimedia websites with eCommerce capabilities. Covers advanced web authoring skills and dynamic content, industry current coding, and scripting languages. Includes mobile interface design. Builds on skills obtained in CIS 123 - Web Design I. [D; CSU]

**CIS 257**  
**WEB 2.0 SOCIAL MEDIA STRATEGIES**  
**3 UNITS**

Pass/No Pass or Grade is Allowed

Recommended Preparation: CIS 101 or equivalent; CL 120 or equivalent.

Lecture 3 hours, laboratory 1 hour

Offered: FALL, SPRING

Covers hands-on use of state-of-the-art Web 2.0 interactivity for commercial and personal use. Creates and optimizes social networks. Designs and implements social media strategies with multiple platforms. Integrates use of 2.0 tools into marketing and branding and measures results. Includes RSS feeds, blogs, wikis, casts, interactive video and photo sites, and cloud computing. [D; CSU]

**CIS 290**  
**WORK EXPERIENCE CIS APPLICATIONS I**  
**2-4 UNITS**

Pass/No Pass or Grade is Allowed

Recommended Concurrent Enrollment: BUS 136.

Limitation on Enrollment: Declared Computer Information System major.

Laboratory 12 hours

Offered: FALL, SPRING

Introduces principles and skills acquired in the Computer Information Systems majors to on-the-job assignments. One unit of credit is granted for every 54 hours of work experience. Credit may be accrued at the rate of 2 to 4 units per semester for a maximum of fourteen units. The job supervisor and instructor will evaluate each student's job performance. [D; CSU]

**CIS 291**

**WORK EXPERIENCE CIS APPLICATIONS II**

**2-4 UNITS**

Pass/No Pass or Grade is Allowed

Recommended Concurrent Enrollment: Enrollment in one other class directly related to the Computer Information Systems major in order to apply learned theory in a practical hands-on setting through an internship class.

Prerequisite: CIS 290 or equivalent.

Limitation on Enrollment: Declared Computer Information System major.

Laboratory 12 hours

Offered: FALL, SPRING

Applies beginning-level principles and skills acquired in the Computer Information Systems majors to on-the-job assignments. One unit of credit is granted for every 54 hours of work experience. Credit may be accrued at the rate of 2 to 4 units per semester for a maximum of fourteen units. The job supervisor and instructor will evaluate each student's job performance. [D; CSU]

**CIS 292**

**WORK EXPERIENCE CIS APPLICATIONS III**

**2-4 UNITS**

Pass/No Pass or Grade is Allowed

Recommended Concurrent Enrollment: Enrollment in one other class directly related to the Computer Information Systems major in order to apply learned theory in a practical hands-on setting through an internship class.

Prerequisite: CIS 291 or equivalent.

Limitation on Enrollment: Declared Computer Information Systems major.

Laboratory 12 hours

Offered: FALL, SPRING

Provides intermediate-level principles and skills acquired in the Computer Information Systems majors to on-the-job assignments. One unit of credit is granted for every 54 hours of work experience. Credit may be accrued at the rate of 2 to 4 units per semester for a maximum of fourteen units. The job supervisor and instructor will evaluate each student's job performance. [D; CSU]

**CIS 293**

**WORK EXPERIENCE CIS APPLICATIONS IV**

**2-4 UNITS**

Pass/No Pass or Grade is Allowed

Recommended Concurrent Enrollment: Enrollment in one other class directly related to the Computer Information Systems major in order to apply learned theory in a practical hands-on setting through an internship class.

Prerequisite: CIS 292 or equivalent.

Limitation on Enrollment: Declared Computer Information Systems major.

Laboratory 12 hours

Offered: FALL, SPRING

Covers advanced-level principles and skills acquired in the Computer Information Systems majors to on-the-job assignments. One unit of credit is granted for every 54 hours of work experience. Credit may be accrued at the rate of 2 to 4 units per semester for a maximum of fourteen units. The job supervisor and instructor will evaluate each student's job performance. [D; CSU]

**CIS 299**

**INDEPENDENT STUDY**

**1-3 UNITS**

Pass/No Pass or Grade is Allowed

Limitation on Enrollment: Eligibility for independent study.

Lecture 3 hours

Offered: ALL

Individual study or research in some area of computer information systems of particular interest to the student and not included in regular courses of the college. [D; CSU; \*\*UC] (\*\*UC Limitation: credit for variable topics courses is given only after a review of the scope and content of the courses by the enrolling UC campus.)