

# COMPUTER INFORMATION SYSTEMS

## Contact Information

**Division**  
Business and Technology

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## Overview

The Computer Information Systems programs prepare students for a wide array of Information Technology (IT) career paths. IT encompasses computer professional careers and positions, from Tech Support to Cyber Security, and from Office Work to Business Analyst. Careers in IT deal with the design, creation, management, maintenance, and business use of the varied components of computer systems, including software, hardware, networks, and the cloud. The field spans a broad range of industries, including technology, healthcare, finance, retail, government and education; and includes jobs that involve business computer applications, databases, technical and customer support services, web authoring/developing, Internet information research, network administration, and cybersecurity. Some courses prepare students for industry certifications such as CompTIA's, A+, Network+, Security+, or Microsoft's MSCE. The curriculum also provides valuable computer experience and training for students who are enrolled in other disciplines of the College.

## Faculty

**Denise Bushnell**  
**Professor, Computer Information Systems**  
B.S., University of Alabama  
M.B.A., Walden University

**Richard S. Monsen**  
**Assistant Professor, Computer Information Systems**  
B.S., California State University, Sacramento

**Annette A. Nylander**  
**Professor, Computer Information Systems**  
A.S., Sierra College  
B.A., The Union Institute  
M.B.A., DeVry University, Keller Graduate School of Management

**Melissa A. Prinzing**  
**Professor, Computer Information Systems**  
B.S., California Polytechnic State University, San Luis Obispo  
M.B.A., California Polytechnic State University, San Luis Obispo

## Computer Information Systems Advisory Committee

- David Prinzing, Founder and CTO, Algorithmic Ads, Roseville
- Jaime B. Sainz, Cyber Security Service and Portfolio Manager, Hewlett Packard Enterprise, Roseville

- Jonathan "JT" Taylor, Manager, Technical Strategy, Planning and Architecture, Disaster Recovery, Sutter Health Information Services, Sacramento
- George Usi, President, Sactech, Sacramento
- Eric F.G. Wilson, Director of IT Core Services, Rabobank, Roseville

## Degrees/Certificates

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## Computer Information Systems—Business Information Worker

### AA or AS Degree and/or Certificate of Achievement (formerly Computer Information Systems-Computer Applications)

The Business Information Worker (BIW) program prepares students for entry-level employment in the field of Business Information Technology. Emphasis is on practical, career-oriented skills for professional office environment positions using current computer application programs for processing and presenting text, numerical data and graphics, as well as applying basic oral and written business communication. This program of courses aligns with the California Community College's statewide BIW career preparation pathway ([ict-dm.net/biw](http://ict-dm.net/biw) (<http://ict-dm.net/biw>)). For the degree, students must fulfill the following major requirements with grades of "C" or better, complete a minimum of 60 degree-applicable semester units (12 of which must be completed at Sierra College) with a grade point average of at least 2.0 and complete one of the following three general education patterns:

- Sierra College Associate Degree Requirements (<http://catalog.sierracollege.edu/student-resources/general-education/associate-degree-requirements/>);
- California State University General Education Breadth (CSU GE) (<http://catalog.sierracollege.edu/student-resources/general-education/california-state-university-general-education-breadth-requirements/>) pattern;

- Intersegmental General Education Transfer Curriculum (IGETC) (<http://catalog.sierracollege.edu/student-resources/general-education/intersegmental-general-education-transfer-curriculum-igetc>).

A certificate is designed to provide career technical skills; it is not equivalent to an associate degree.

#### Required Courses

Code	Title	Units
BUS 0085 or BUS 0102	Introduction to Oral Communication Business Communications	3
BUS 0116	Customer Service Skills	3
CIS 0050	Applying Computer Software	3
CIS 0062	Business Information Systems	3
CIS 0070	Word Processing-Beyond the Basics	3
CIS 0080	Spreadsheets in a Business Environment	3
CIS 0105	Microsoft Outlook-Managing Information	3
<b>Select 3 units from the following:</b>		3
CIS 0067	Foundations for Creating Web Pages	
CIS 0090	Database Management	
CIS 0091	Data Analytics/Visualization Using Tableau	
CIS 0095	Internship in Computer Information Systems	
CIS 0100	Software for Dynamic Presentations	
CIS 0120	Creating Business Graphics with Microsoft Publisher	
CIS 0136	Project Management Concepts and Software	
Total Units		24

## Computer Information Systems–IT Technician

### AA or AS Degree and/or Certificate of Achievement (formerly Computer Information Systems–Technical Support)

The IT Technician program prepares students for entry level positions in computer retail, helpdesk, system administration, computer application installation, and technically oriented administrative roles. Many of the courses also help prepare students for industry recognized certification examinations. For the degree, students must fulfill the following major requirements with grades of “C” or better, complete a minimum of 60 degree-applicable semester units (12 of which must be completed at Sierra College) with a grade point average of at least 2.0 and complete one of the following three general education patterns:

- Sierra College Associate Degree Requirements (<http://catalog.sierracollege.edu/student-resources/general-education/associate-degree-requirements>);
- California State University General Education Breadth (CSU GE) (<http://catalog.sierracollege.edu/student-resources/general-education/california-state-university-general-education-breadth-requirements>) pattern;
- Intersegmental General Education Transfer Curriculum (IGETC) (<http://catalog.sierracollege.edu/student-resources/general-education/intersegmental-general-education-transfer-curriculum-igetc>).

[education/intersegmental-general-education-transfer-curriculum-igetc](http://catalog.sierracollege.edu/student-resources/general-education/intersegmental-general-education-transfer-curriculum-igetc)).

A certificate is designed to provide career technical skills; it is not equivalent to an associate degree.

#### Required Courses

Code	Title	Units
CIS 0026	Information and Communication Technology Essentials	4
CIS 0050	Applying Computer Software	3
CIS 0062	Business Information Systems	3
CIS 0065	Computer Network Fundamentals	3
CIS 0141	Installing, Configuring and Administering a Client OS	3
<b>Select 6 units from the following:</b>		6
BUS 0085 or BUS 0102	Introduction to Oral Communication Business Communications	
BUS 0116	Customer Service Skills	
CIS 0095	Internship in Computer Information Systems (up to 3 units)	
CIS 0105	Microsoft Outlook-Managing Information	
Total Units		22

## Computer Information Systems–Networking and Security

### AA or AS Degree and/or Certificate of Achievement (formerly Computer Information Systems–Networking)

Successful completion of the curriculum in Networking and Security prepares students to advance their Information Technology careers as network administrators and cyber security professionals. Many of the courses also help prepare students for industry recognized certification exams. For the degree, students must fulfill the following major requirements with grades of “C” or better, complete a minimum of 60 degree-applicable semester units (12 of which must be completed at Sierra College) with a grade point average of at least 2.0 and complete one of the following three general education patterns:

- Sierra College Associate Degree Requirements (<http://catalog.sierracollege.edu/student-resources/general-education/associate-degree-requirements>);
- California State University General Education Breadth (CSU GE) (<http://catalog.sierracollege.edu/student-resources/general-education/california-state-university-general-education-breadth-requirements>) pattern;
- Intersegmental General Education Transfer Curriculum (IGETC) (<http://catalog.sierracollege.edu/student-resources/general-education/intersegmental-general-education-transfer-curriculum-igetc>).

A certificate is designed to provide career technical skills; it is not equivalent to an associate degree.

#### Required Courses

Code	Title	Units
CIS 0062	Business Information Systems	3
CIS 0065	Computer Network Fundamentals	3

CIS 0141	Installing, Configuring and Administering a Client OS	3
CIS 0142	Systems and Network Administration	3
CIS 0147	Introduction to Information Systems Security	3
CIS 0152	Introduction to Cybersecurity: Ethical Hacking	3
<b>Select 6 units from the following:</b>		<b>6</b>
CIS 0066	Routing and Switching Essentials	
CIS 0088	Computer Forensics Fundamentals (also ADMJ 0088)	
CIS 0090	Database Management	
CIS 0095	Internship in Computer Information Systems (up to 3 units)	
CIS 0136	Project Management Concepts and Software	
CIS 0148	Virtualization Concepts and Technologies	
CIS 0151	Information Storage and Management	
CIS 0153	Principles of Cybersecurity Analysis	
CSCI 0012	Programming Concepts and Methodology I	
CSCI 0050	Introduction to Unix/Linux	
Total Units		24

## Business Information Worker (Stage 1)

### Skills Certificate

The Business Information Worker (Stage 1) skills certificate prepares students for entry-level employment in an office. The emphasis is on practical, career-oriented skills for professional office environment positions using current computer application programs for processing and presenting text, numerical data and graphics; managing calendars and email; and applying basic oral and written business communication. This program of courses aligns with the California Community College's statewide BIW career preparation pathway ([ict-dm.net./biw](http://ict-dm.net./biw) (<http://ict-dm.net./biw>)). A skills certificate is designed to provide career technical skills; it is not equivalent to an associate degree.

### Required Courses

Code	Title	Units
BUS 0085 or BUS 0102	Introduction to Oral Communication Business Communications	3
BUS 0116	Customer Service Skills	3
CIS 0050	Applying Computer Software	3
CIS 0062	Business Information Systems	3
CIS 0105	Microsoft Outlook-Managing Information	3
Total Units		15

## Business Information Worker (Stage 2)

### Skills Certificate

The Business Information Worker (BIW) (Stage 2) skills certificate further prepares students for employment in an office. The emphasis is on more advanced practical, career-oriented skills for professional office environment positions using current computer application programs for processing and presenting text, numerical data and graphics as well as using accounting software. This program of courses aligns with

the California Community College's statewide BIW career preparation pathway ([ict-dm.net./biw](http://ict-dm.net./biw) (<http://ict-dm.net./biw>)). A skills certificate is designed to provide career technical skills; it is not equivalent to an associate degree.

### Required Courses

Code	Title	Units
BUS 0008	Computerized Accounting for Windows	3
CIS 0070	Word Processing-Beyond the Basics	3
CIS 0080	Spreadsheets in a Business Environment	3
CIS 0090	Database Management	3
CIS 0100	Software for Dynamic Presentations	3
Total Units		15

## Digital Literacy

### Skills Certificate

(formerly Computer Basics)

This Digital Literacy skills certificate equips students with the essential Windows personal computer skills required for school or business. Helps prepare students for careers or fields of study that require computer use, such as data entry, clerical support, receptionist, or customer service and may serve as a foundation for acquiring advanced or specialized computer skills. Appropriate for students seeking retraining. A skills certificate is designed to provide career technical skills; it is not equivalent to an associate degree.

### Required Courses

Code	Title	Units
BUS 0116	Customer Service Skills	3
CIS 0030	Computer Literacy for College Success	3
CIS 0050	Applying Computer Software	3
SKDV 0010	How to be a Successful Online Student	1
Total Units		10

## Information Assurance and Cyber Defense

### Skills Certificate

This skills certificate provides students with the specific knowledge and skills of an entry level cyber security professional. This foundational level was established by the Department of Homeland Security (DHS) and the National Security Agency (NSA) through their co-sponsored National Centers of Academic Excellence in Information Assurance and Cyber Defense (CAE2Y) program. This skills certificate prepares students for a variety of information technology positions in the ICT industry sector, such as network administrator, network engineer, IT security professional, and security analyst. A skills certificate is designed to provide career technical skills; it is not equivalent to an associate degree.

### Required Courses

Code	Title	Units
CIS 0065	Computer Network Fundamentals	3
CIS 0142	Systems and Network Administration	3
CIS 0147	Introduction to Information Systems Security	3
CSCI 0012	Programming Concepts and Methodology I	3
Total Units		12

## Information Assurance Technician (Level 1)

### Skills Certificate

This skills certificate aligns with the requirements developed by the Department of Defense relative to its Directive 8570.1 for achieving Information Assurance Technician Level 1 (IAT-1) status. Students are prepared for a wide variety of positions in the computer industry such as desktop support technician, level 1 and level 2 help desk support, customer service specialist and network administrator. A skills certificate is designed to provide career technical skills; it is not equivalent to an associate degree.

#### Required Courses

Code	Title	Units
CIS 0065	Computer Network Fundamentals	3
CIS 0141	Installing, Configuring and Administering a Client OS	3
Total Units		6

## Information Assurance Technician (Level 2)

### Skills Certificate

This skills certificate aligns with the requirements developed by the Department of Defense relative to its Directive 8570.1 for achieving Information Assurance Technician Level 2 (IAT-2) status. Students are prepared for a wide variety of positions in the computer industry such as network administrator, internet security specialist, network analyst, systems administrator and database administrator. A skills certificate is designed to provide career technical skills; it is not equivalent to an associate degree.

#### Required Courses

Code	Title	Units
CIS 0142 or CSCI 0050	Systems and Network Administration Introduction to Unix/Linux	3
CIS 0147	Introduction to Information Systems Security	3
Total Units		6

## Computer Basics

### Noncredit Certificate of Completion

The Computer Basics Noncredit Certificate of Completion prepares students to work in an office. Students will develop keyboarding skills, become familiar with business computer use. These skills are foundational for further studies in business computer applications and systems.

#### Required Courses

Code	Title	Units
CIS 0820	Beginning Computer Familiarization	0
CIS 0830	Beginning Computer Applications	0
CIS 0835	Beginning Computer Keyboarding	0
Total Units		0

## Courses

Understanding course descriptions (<http://catalog.sierracollege.edu/student-resources/course-information/understanding-course-descriptions>)

### CIS 0026. Information and Communication Technology Essentials

Units: 4

Formerly known as CST 30

Hours: 72 lecture

Provides an introduction to the computer hardware and software skills needed to help meet the growing demand for entry-level ICT professionals. Focuses on the fundamentals of computer hardware and software as well as advanced concepts such as security, networking, and the responsibilities of an ICT professional. Preparation for CompTIA's A+ certification exam. (C-ID ITIS 110) (CSU)

### CIS 0028. Independent Study

Units: 1-3

Designed for students interested in furthering their knowledge at an independent study level in an area where no specific curriculum offering is currently available. Independent study might include, but is not limited to, research papers, special subject area projects, and research projects. See Independent Study page in catalog. (CSU)

### CIS 0030. Computer Literacy for College Success

Units: 3

Advisory: Concurrent enrollment in CIS 30L; completion of ESL 515 with grade of "C" or better for non native speakers

Hours: 72 (54 lecture, 18 laboratory)

Hands-on introduction to computer skills for students with little prior experience. Development of computer keyboarding technique, accuracy and speed. Creating, saving and organizing basic word processing and spreadsheet files. Includes computer activities to develop college success strategies. Introduces students to online learning system, using Windows, basic web searching, and using web-based email. (CSU)

### CIS 0030L. Computer Literacy for College Success - Supplemental Laboratory

Units: 0.5

Corequisite: Concurrent enrollment in CIS 30

Hours: 36 laboratory

Optional problem solving course to accompany and support success in CIS 30. For students with little prior computer experience. Basics of using Windows, web browsers, college email, online learning system, word processor, spreadsheet. Development of computer keyboarding technique, accuracy and speed. (pass/no pass grading) (not transferable)

### CIS 0050. Applying Computer Software

Units: 3

Advisory: Completion of CIS 30 with grade of "C" or better

Hours: 72 (54 lecture, 18 laboratory)

An overview of business and academic use of common office application software for word processing, spreadsheets, charting data, databases, and presentations. Using current operating system software, managing files, using online tools, transmitting files via the Internet. Common computer hardware and software system concepts; impact of computers on society, networks and security. (CSU)

### CIS 0050L. Applying Computer Software - Supplemental Laboratory

Units: 0.5

Corequisite: Concurrent enrollment in CIS 50

Hours: 36 laboratory

Optional problem solving course to accompany and support success in CIS 50. Practice use and application of common office application software for word processing, spreadsheets, charting data, databases, and presentations. Practice using current business operating system software and online tools. (pass/no pass grading) (not transferable)

**CIS 0052. Creating a Virtual Office***Units: 3*

Also known as BUS 52

Advisory: Eligibility for ENGL 1A

Hours: 54 lecture

Introduction to the Virtual Office Profession. Explores issues to be addressed when creating a virtual office. Topics include managing time, customizing workplace environment, evaluating and buying technology, communicating with technology, and business ethics. (not transferable)

**CIS 0053. Marketing a Virtual Office***Units: 3*

Also known as BUS 53

Advisory: Completion of BUS 52/CIS 52 and CIS 70 with grades of "C" or better

Hours: 54 lecture

Introduction to marketing techniques and skills needed for a virtual or home-based office. Students identify, evaluate, and employ various virtual marketing techniques such as online networking, developing marketing kits and plans, researching professional organizations, creating websites, and utilizing Web-based resources and social media to market skills, services, and products. (not transferable)

**CIS 0054. Managing a Virtual Office***Units: 3*

Also known as BUS 54

Advisory: Completion of CIS 50, BUS 52/CIS 52, and BUS 53/CIS 53 with grades of "C" or better

Hours: 54 lecture

Examines specialized professional administrative concepts and documents used to manage information in the virtual workplace. Organizational concepts, decision making, effective business relationships, time and stress management, business plans, ethics, customer service, virtual business technology, and teamwork skills are emphasized. (not transferable)

**CIS 0062. Business Information Systems***Units: 3*

Advisory: Eligibility for ENGL 1A

Hours: 72 (54 lecture, 18 laboratory)

Examination of information systems and their role in business. Focus on information systems, database management systems, networking, e-commerce, ethics and security, computer systems hardware and software components. Application of these concepts and methods through hands-on projects developing computer-based solutions to business problems. (C-ID BUS 140 and C-ID ITIS 120) (CSU)

**CIS 0065. Computer Network Fundamentals***Units: 3*

Formerly known as CST 40

Advisory: Completion of CIS 26 with grade of "C" or better

Hours: 72 (54 lecture, 18 laboratory)

Introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. The principles and structure of IP (Internet Protocol) addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for further study of computer networks. Uses OSI (Open Systems Interconnection) and TCP (Transmission Control Protocol) layered models to examine the nature and roles of protocols and services at the application, network, data link, and physical layers. Preparation for the CompTIA Network+ certification exam. (C-ID ITIS 150) (CSU)

**CIS 0066. Routing and Switching Essentials***Units: 3*

Prerequisite: Completion of CIS 65 with grade of "C" or better

Hours: 72 (54 lecture, 18 laboratory)

Architecture, components, and operations of routers and switches in a small network. Configuring a router and a switch for basic functionality. Configure and troubleshoot routers and switches and resolve common issues with RIPv1, RIPv2, single-area and multi-area OSPF, virtual LANs, and inter-VLAN routing in both IPv4 and IPv6 networks. Along with CIS 65, prepares students for the current version of the Cisco Certified Entry-level Network Technician (CCENT) certification examination. (CSU)

**CIS 0067. Foundations for Creating Web Pages***Units: 3*

Advisory: Completion of CIS 50 with grade of "C" or better

Hours: 54 lecture

Introduction to building Web pages using HTML and basic Web-authoring software; technical and design concepts behind Web pages: how the Internet works, connection technologies, Web search techniques, evaluating Web pages, file transfer and management, file compression, browser tips and tricks, mailing lists, Internet security. (CSU)

**CIS 0070. Word Processing-Beyond the Basics***Units: 3*

Advisory: Keyboarding skill of 25 w.p.m.; completion of CIS 50 and SKDV 10 with grades of "C" or better

Hours: 72 (54 lecture, 18 laboratory)

Advanced word processing techniques, including styles and outlines, generating form letters, mailing labels and envelopes using mail merge, working with master documents, indexes and tables of content, creating reports using wizards and templates, applying macros, integrating software, creating web pages and online forms. (CSU)

**CIS 0080. Spreadsheets in a Business Environment***Units: 3*

Advisory: Completion of CIS 50 and SKDV 10 with grades of "C" or better

Hours: 72 (54 lecture, 18 laboratory)

Design and use of "what-if" analysis, static and dynamic web pages, financial functions, data and lookup tables, amortization schedules and templates. Includes working with multiple worksheets and workbooks, analyzing worksheet results, sorting and querying a worksheet database, using macros, and integrating software. (CSU)

**CIS 0088. Computer Forensics Fundamentals***Units: 3*

Advisory: Completion of ADMJ 54 and CIS 147 with grades of "C" or better

Hours: 54 lecture

Introduction to the methods used to properly conduct a computer forensics investigation, beginning with a discussion of ethics, while mapping the objectives of the International Association of Computer Investigative Specialists (IACIS) certification. Topics covered include an overview of computer forensics as a profession; the computer investigation process; understanding operating systems boot processes and disk structures; data acquisition and analysis; technical writing; and a review of familiar computer forensics tools. (CSU)

**CIS 0090. Database Management***Units: 3*

Advisory: Completion of CIS 50 with grade of "C" or better

Hours: 72 (54 lecture, 18 laboratory)

Developing database systems using the current version of Microsoft Access. Includes designing database structures: tables, queries, forms, reports, and more. Also includes integrating with the Web, Excel and other programs. Emphasis on hands-on learning. (CSU)

**CIS 0091. Data Analytics/Visualization Using Tableau***Units: 3*

Advisory: Completion of CIS 80 and CIS 90 with grades of "C" or better

Hours: 72 (54 lecture, 18 laboratory)

Learn how to use Tableau, a leading data analysis and visualization tool, to bring the world's data into views that everyone can use and understand. Go beyond basic charts by building powerful dashboards and drill down reports to support business decision makers or help explain visually the global impact of a single voice. (not transferable)

**CIS 0095. Internship in Computer Information Systems***Units: 0.5-4*

Designed for advanced students to work in an area related to their educational or occupational goal. Provides new on-the-job technical training under the direction of a worksite supervisor, allowing students to expand knowledge and skills in the chosen field. Mandatory orientation session and faculty approval to determine eligibility. One unit of credit is equal to each 60 hours of non-paid work, or each 75 hours of paid work. Students may earn up to a total of 16 units in internship courses (any course numbered 95 and PDEV 94). (CSU-with unit limitation)

**CIS 0100. Software for Dynamic Presentations***Units: 3*

Advisory: Completion of CIS 50 with grade of "C" or better or equivalent digital fluency

Hours: 72 (54 lecture, 18 laboratory)

Amplify your message by integrating graphics, animation, music, video and use various software applications to develop unique, effective, professional quality presentations. Design and customize high quality presentations employing best practices. (CSU)

**CIS 0105. Microsoft Outlook-Managing Information***Units: 3*

Advisory: Completion of CIS 50 with grade of "C" or better

Hours: 54 lecture

Includes managing email folders; sending, receiving, forwarding email messages; using "netiquette" and distribution lists; scheduling appointments, meetings, events; creating contacts, address books and calendars; tracking tasks; setting reminders; sharing information and publishing schedules via the web. (not transferable)

**CIS 0120. Creating Business Graphics with Microsoft Publisher***Units: 3*

Advisory: Completion of CIS 50 or 70 with grade of "C" or better

Hours: 54 lecture

Designed to assist the office professional in utilizing Microsoft Publisher to create high-quality desktop publishing documents. Learning activities include preparation of a flyer, newsletter, logo, CD liner, business card, tri-fold brochure, calendar, catalog, event program, coupon, and certificate. (CSU)

**CIS 0136. Project Management Concepts and Software***Units: 3*

Formerly known as the combination of CIS 135 and 136

Hours: 72 (54 lecture, 18 laboratory)

Explores Project Management concepts and terminologies along with the use of Microsoft Office Project and other project management tools through discussions, hands-on exercises and classroom learning experiences. Includes WBS, budgeting, and resource allocation and other important PM topics such as Scope and Project Team Development. Helps prepare students to use the software package in their daily duties as a project manager or project assistant. (not transferable)

**CIS 0141. Installing, Configuring and Administering a Client OS***Units: 3*

Formerly known as CST 45

Advisory: Completion of CIS 65 with grade of "C" or better

Hours: 72 (54 lecture, 18 laboratory)

Setup and support for a desktop operating system using a current desktop operating system in a networked environment. Creation of local and domain-level accounts, creation of shared resources, use of network services, remote access, resource management and monitoring, and security considerations. (CSU)

**CIS 0142. Systems and Network Administration***Units: 3*

Formerly known as CST 50

Prerequisite: Completion of CIS 65 with grade of "C" or better

Advisory: Completion of CIS 62 with grade of "C" or better

Hours: 54 lecture

Course provides knowledge and skills required to build, maintain, troubleshoot and support server hardware and software technologies.

Covers environmental issues, disaster recovery, physical/software security procedures, industry terminology and concepts, server roles, specializations, and interaction within the overall computing environment. (C-ID ITIS 155) (CSU)

**CIS 0147. Introduction to Information Systems Security***Units: 3*

Formerly known as CST 70

Prerequisite: Completion of CIS 65 with grade of "C" or better

Advisory: Completion of CIS 142 with grade of "C" or better

Hours: 72 (54 lecture, 18 laboratory)

Introduction to 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. Preparation for the CompTIA Security+ certification exams. Also includes exploration and practice of 21st Century career skills; analysis/solution mindset. (C-ID ITIS 160) (CSU)

**CIS 0148. Virtualization Concepts and Technologies***Units: 3*

Formerly known as CIS 421

Advisory: Completion of CIS 65 with grade of "C" or better

Hours: 54 lecture

Knowledge and skills necessary to understand and implement Virtualization Concepts. The core concepts of creating and managing virtual machines, network servers, and network design presented. Labs demonstrate benefits associated with virtualization such as fault tolerance and high availability. Successful completion of this course meets the educational requirement for VMware certification. (CSU)

**CIS 0151. Information Storage and Management***Units: 3*

Advisory: Completion of CIS 147 with grade of "C" or better

Hours: 54 lecture

Introduction to principles of information storage and management including the emerging field of virtualization technologies. Covers Direct Attached Storage (DAS), networked storage models such as Network Attached Storage (NAS), Storage Area Network (SAN), and Content Addressed Storage (CAS); and applications in business continuity, replication, disaster recovery, and cloud computing. Includes exposure to real-world storage networking technologies. (CSU)

**CIS 0152. Introduction to Cybersecurity: Ethical Hacking***Units: 3*

Advisory: Completion of CIS 147 with grade of "C" or better

Hours: 54 lecture

Immerses IT Professionals in hands-on intensive environment providing in-depth knowledge and experience with current essential security systems. Provides understanding of perimeter defenses and leads to scanning and attacking networks; no real networks are harmed. Students learn how intruders escalate privileges and the steps to be taken to secure a system. Also covers Intrusion Detection, Policy Creation, Social Engineering, DDoS Attacks, Buffer Overflows, and Virtual Creation. Focus includes legal and regulatory requirements, ethical issues, basic methodology and technical tools used for ethical hacking and penetration tests. Students establish a pre-test agreement with the enterprise, discover and exploit vulnerabilities, participate as a member of a pen test team and prepare a penetration test report. (CSU)

**CIS 0153. Principles of Cybersecurity Analysis***Units: 3*

Prerequisite: Completion of CIS 147 with grade of "C" or better or CompTIA Security+ certification as determined by the Computer Information Systems department chair

Hours: 72 (54 lecture, 18 laboratory)

Focuses on the critical knowledge and skills required to prevent, detect and combat cybersecurity threats; includes the application of behavioral analytics to improve the overall state of IT security. Covers exam objectives relating to the CompTIA Cybersecurity Analyst (CSA+) industry certification. (CSU)

**CIS 0820. Beginning Computer Familiarization***Units: 0*

Advisory: Completion of CIS 835 with grade of "Pass"

Hours: 36 (27 lecture, 9 laboratory)

This introductory course develops basic computer skills needed for college-level courses, workplace productivity, and personal enrichment. It provides the individuals who are new to computing or who have very little computing experiences with slower paced, general, non-technical information as well as in-class hands-on instruction reinforcement. This course introduces use of common computer terminology and concepts, file management, electronic mail, online course management system, and internet. (pass/no pass grading) (noncredit)

**CIS 0830. Beginning Computer Applications***Units: 0*

Advisory: Completion of CIS 820 and CIS 835 with grades of "Pass"

Hours: 36 (27 lecture, 9 laboratory)

This course is designed to introduce students to the use of word processing, spreadsheet, presentations, and database programs. It provides the individuals who are new to computing or who have very little computing experiences with slower paced, general, non-technical information as well as in-class hands-on instruction reinforcement. The course includes basic operations of creating, editing, formatting, saving, retrieving, and printing documents. (pass/no pass grading) (noncredit)

**CIS 0835. Beginning Computer Keyboarding***Units: 0*

Hours: 36 (27 lecture, 9 laboratory)

This course introduces touch typing of alphabetic, numeric, and symbol keys. It covers keyboarding techniques, speed-and-accuracy development, and essential computer-keyboarding information. This course is specifically designed for the beginning typist as well as those who have been typing for a long time using improper technique. Not recommended for students with one year of high school keyboarding. (pass/no pass grading) (noncredit)

**CIS 0865. CompTIA Network+ Exam Prep***Units: 0*

Advisory: Completion of CIS 65 with grade of "C" or better

Hours: 12 lecture

This course is intended to prepare students to take and pass the CompTIA Network+ Certification Exam. Students taking this class should have taken CIS 65 class or equivalent, and have a thorough understanding of the key concepts covered in exam. The course will discuss the layout and content areas of the exam, example test questions, and high-level review of key concepts when needed. (pass/no pass grading) (noncredit)

## Program Student Learning Outcomes (PSLOs)

- Design LAN and WAN logical topologies that support various sized organizations.
- Assess security risks and identify ways to minimize their threat and/or impact.
- Analyze various operating system options and make recommendations based on organization needs.
- Demonstrate digital literacy and work habits required for a successful virtual business.
- Evaluate effectiveness of web-based business tools for successful operation of a virtual business.
- Develop and implement common deliverables for virtual office entrepreneur.
- Diagnose common software and hardware problems.
- Analyze and integrate software solutions for the business environment.
- Demonstrate professional communication and customer services skills.
- Demonstrate computer literacy.
- Analyze scenarios, investigate options, and appropriately apply workplace computer programs.
- Demonstrate file management proficiency.