Computer Information Science

Computer Programming

Program Description
This program is designed to prepare the student for employment as a computer programmer trainee.

Certificate of Achievement and Associate in Science Degree
A Certificate of Achievement can be obtained upon completion of the 33-unit major. The Associate in Science Degree may be obtained by completing the 33-unit major, general education requirements, and electives. All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Computer Programming Certificate of Achievement/Associate Degree will be able to:
1. Construct applications that use GUI (graphical user interface) components and access databases for data permanence.
2. Develop a programming solution to a data structure problem using object-oriented methodologies and appropriate data structures and algorithms.
3. Implement a well-designed, properly normalized relational database after analyzing user requirements and business rules.

REQUIRED COURSES.. **Units**
(listed in recommended sequence)
CIS 001 Introduction to Computer Science 3
BUS 092 Business Communication....................................... 3
CIS 022 Introduction to Programming.............................. 3
CIS 055 MS Windows Operating Systems......................... 3
CIS 023 Data Structures and Algorithms........................... 3
CIS 015 Programming in Visual Basic.NET....................... 3
CIS 089 Essential Networking Technologies..................... 3
CIS 078 Access - Database Management System.............. 3
CIS 052 UNIX Operating System 3
CIS 020 Assembly Programming 3
3 units from Recommended Electives................................ 3
    Required Major Total Units 33

Recommended Electives (select 3 units)................... **Units**
ACCT 001 Principles of Accounting - Financial 4
ACCT 002 Principles of Accounting – Managerial........... 4
BUS 005 Introduction to Business....................................... 3
CIS 035 Introduction to Java Programming 3
CIS 060 Introduction to the Internet................................ 1.5
CIS 061 Creating Web Pages... 3
CIS 066 Microsoft Word... 3
CIS 068 Object Oriented Game
    Programming with Flash 3
CIS 073 Microsoft Excel... 3
CIS 080 SQL Database Management Systems.................... 3
OCED 090 Occupational Work Experience 1- 8
OCED 091 General Work Experience 1-6

Solano General Education.. 21
Electives (as needed to reach 60 units)............................ 6
    Total Degree Units Solano GE.................................... 60

Note: Students planning to transfer to a four-year college and major in Management Information Systems/ Computer Science should see a counselor regarding Business Articulation Agreements for a particular university campus.

This is a Gainful Employment Program. For additional information, please visit
http://www.solano.edu/gainful_employment/ and select "Computer & Info Science: Computer Programming."

Computer Information Science

Microcomputer Applications

Program Description
This option is designed to prepare the student for employment as a microcomputer applications specialist.

Certificate of Achievement and Associate of Science Degree
A Certificate of Achievement can be obtained upon completion of the 30-unit major. The Associate in Science Degree may be obtained by completing the 30-unit major, general education requirements, and electives. All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Microcomputer Applications Certificate of Achievement/Associate Degree will be able to:
1. Demonstrate knowledge of application software such as word processing, spread sheets, personal information management, database, operating systems, and networking, presentation and html editors.
2. Understand Visual Basic programming.
3. Demonstrate effective oral and written communication.

REQUIRED COURSES... **Units**
(listed in recommended sequence)
CIS 001 Introduction to Computer Science 3
CIS 015 Programming in Visual Basic.NET...................... 3
CIS 055 MS Windows Operating Systems........................ 3
CIS 061 Creating Web Pages................................... 3
CIS 066 Microsoft Word....................................... 3
CIS 073 Microsoft Excel...................................... 3
CIS 078 Access - Database Management System.............. 3
CIS 089 Essential Networking Technologies.................... 3
CIS 090 Introduction to PowerPoint............................... 1.5
CIS 091 Microsoft Outlook................................... 1.5
BUS 092 Business Communication.................................... 3
    Required Major Total Units **30**

Solano General Education... **21**
Electives (as needed to reach 60 units)............................ **9**
    Total Degree Units Solano GE.................................... **60**

This is a Gainful Employment Program. For additional information, please visit
*http://www.solano.edu/gainful_employment/*and select "Computer & Info Science: Microcomputer Applications."

Computer Information Science

Web Development and Administration

Program Description
This specialty is designed to prepare the student for employment as a web site administrator and developer.

Certificate of Achievement and Associate in Science Degree
A Certificate of Achievement can be obtained upon completion of the 33-unit major. The Associate in Science Degree may be obtained by completing the 33-unit major, general education requirements, and electives. All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Web Development and Administration Certificate of Achievement/Associate Degree will be able to:
1. Properly use design elements and an html editor in creating web pages.
2. Describe and explain the use of a database in a website utilizing input forms, queries, and data base results.
3. Develop a project incorporating CSS, search forms, tables, photo galleries, shared borders, themes, interactive components, dynamic web pages and publish to a website.

REQUIRED COURSES.. **Units**
CIS 001 Introduction to Computer Science 3
CIS 061 Creating Web Pages.. 3
CIS 062 Creating Web Interactivity with Flash................. 3
CIS 069 Multimedia for the Web.. 3
CIS 072 Extensible Markup Language (XML)................ 1.5
CIS 075 Client-Side Web Programming 3
CIS 080 SQL Database Management Systems................... 3
CIS 081 Server-Side Web Programming............................ 3
CIS 083 Web Server Administration................................... 3
CIS 089 Essential Networking Technologies.................... 3
CIS 111 Web Design with Cascading Style Sheets......... 1.5
3 units from List A.. 3
    Required Major Total Units 33

List A: (Select 3 units) .... **Units**
CIS 015 Programming in Visual Basic.NET...................... 3
CIS 022 Introduction to Programming.............................. 3
CIS 023 Data Structures and Algorithms.......................... 3
CIS 035 Introduction to Java Programming 3
CIS 068 Object Oriented Game Programming
    with Flash 3
CIS 078 Access - Database Management System.............. 3
CIS 120 Developing XML Web Services......................... 1.5
CIS 121 PHP Programming with MySQL.......................... 3

Solano General Education.. 21
Electives (as needed to reach 60 units)............................ 6
    Total Degree Units Solano GE................................... 60

This is a Gainful Employment Program. For additional information, please visit
*http://www.solano.edu/gainful_employment/*and select "Web Development & Administration."

Computer Applications Specialist Job-Direct Low Unit Certificate

The required courses must be completed with a minimum grade of C.

REQUIRED COURSES.. **Units**
BUS 100 Work Readiness 1.5
CIS 066 Microsoft Word.. 3
CIS 073 Microsoft Excel.. 3
CIS 078 Access - Database Management System.............. 3
    Total Units 10.5

Database Specialist Job-Direct Low Unit Certificate

The required courses must be completed with a minimum grade of C.

REQUIRED COURSES.. **Units**
CIS 072 Extensible Markup Language (XML) 1.5
CIS 078 Access - Database Management System.............. 3
CIS 080 SQL Database Management Systems................... 3
    Total Units 7.5

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Digital Media and Web Development Job-Direct
Low Unit Certificate

The required courses must be completed with a minimum grade of C.

REQUIRED COURSES... **Units**
CIS 061 Creating Web Pages 3
CIS 062 Creating Web Interactivity 3
CIS 070 Adobe Photoshop for the Web 3
CIS 087 Adobe Illustrator for the Web 3
    Total Units **12**

Microsoft Office Specialist Job-Direct
Low Unit Certificate

The required courses must be completed with a minimum grade of C.

REQUIRED COURSES.. **Units**
CIS 066 Microsoft Word.. 3
CIS 073 Microsoft Excel 3
CIS 078 Access-Database Management System 3
CIS 090 Introduction to PowerPoint 1.5
CIS 091 Microsoft Outlook 1.5
    Total Units **12**

Web Developer Job-Direct
Low Unit Certificate

The required courses must be completed with a minimum grade of C.

REQUIRED COURSES.. **Units**
CIS 001 Introduction to Computer Science 3
CIS 061 Creating Web Pages 3
CIS 069 Multimedia for the Web 3
CIS 072 Extensible Markup Language (XML).............. 1.5
CIS 075 Client-Side Web Programming 3
CIS 081 Server-Side Web Programming............................ 3
    Total Units **16.5**

Web Programmer Job-Direct
Low Unit Certificate

The required courses must be completed with a minimum grade of C.

REQUIRED COURSES.. **Units**
CIS 015 Programming in Visual Basic.NET....................... 3
CIS 035 Introduction to Java Programming 3
CIS 068 Object Oriented Game Programming
    with Flash 3
CIS 075 Client-Side Web Programming 3
CIS 081 Server-Side Web Programming 3
    Total Units **15**

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CIS 001   Introduction to Computer Science   3.0 Units
Course Advisory: SCC minimum English and Math standards;
*   keyboarding 30 wpm.*
General Education: Option A: Area D3
Transferable to UC/CSU
Hours: 48-54 lecture, 16-18 lab.
An introduction to the hardware and software components of basic computer information systems. Also, an examination of information systems and their role in business. A review of historical, social and cultural implications of computer technology in today's society. Course content will include hands-on familiarization with a computer operating system and common application software. Additionally, the course includes an introduction to computer programming using the Visual Basic.Net language. Students will learn to develop problem specifications, conduct detailed analysis, design algorithms, and construct structured computer programs. *(C-ID BUS 140)*

CIS 015   Programming in Visual Basic.NET   3.0 Units
Prerequisite: CIS 001 with a minimum grade of C.
Transferable to UC/CSU
Hours: 48-54 lecture, 16-18 lab.
An introduction to Object Oriented Programming (OOP) using Visual Basic.NET, emphasizing problem-solving techniques using structured design and development. An extensive coverage of the Visual Basic computer language will be conducted using the Microsoft.Net environment. Students will construct forms and define procedures, events, properties, methods and objects to solve a variety of business-oriented problems.

CIS 020   Assembly Programming   3.0 Units
Prerequisite: A minimum grade of C in CIS 015, CIS 022 or CIS 035.
General Education: Option A: Area D3
Transferable to UC/CSU
Hours: 32-36 lecture, 48-54 lab.
A hardware-oriented programming course dealing with programming a computer at the assembler language level. Emphasis will be on the assembly language of computers. *(C-ID CIS 142)*

CIS 021   3.0 Units
Discrete Structures for Computer Science
Prerequisite: A minimum grade of C in CIS 023 and Math 020.
General Education: Option B: Area 2
Transferable to UC/CSU
Hours: 32-36 lecture, 48-54 lab.
An introduction to the discrete structures used in Computer Science with an emphasis on their applications. Topics covered include: Functions, Relations and Sets; Basic Logic; Proof Techniques; Basics of Counting; Graphs and Trees; and Discrete Probability. *(C-ID COMP 152)*

CIS 022   Introduction to Programming   3.0 Units
Prerequisite: CIS 001 with a minimum grade of C.
General Education: Option A: Area D4
Transferable to UC/CSU
Hours: 48-54 lecture, 16-18 lab.
An introduction to computer programming. The course's content will include 'hands-on' development of structured algorithms and programs through top-down design, modular and object oriented programming, and standardized control structures. Taught using an object-oriented computer programming language such as C++, C#, Java, etc. *(C-ID COMP 122)*

CIS 023   Data Structures and Algorithms   3.0 Units
Prerequisite: CIS 022 with a minimum grade of C.
General Education: Option A: Area D3
Transferable to UC/CSU
Hours: 32-36 lecture, 48-54 lab.
A study of the basic concepts associated with the creation and manipulation of data structures and their related processing algorithms. Topics include software engineering principles, the selection, design, and implementation of data structures including arrays, sequential and random access files, strings, stacks, queues, linked lists, and binary trees, and the development of efficient algorithms for sorting, searching, and manipulating these data structures. Taught using an object-oriented computer programming language such as C++, C#, Java, etc. *(C-ID CIS 132)*

CIS 035   Introduction to Java Programming   3.0 Units
Prerequisite: A minimum grade of C in CIS 015, CIS 022 or CIS 023.
Transferable to UC/CSU
Hours: 32-36 lecture, 48-54 lab.
Introduces Object Oriented Programming (OOP) using the Java programming language. Includes hands-on development of Java applets and Java applications using objects, classes, interfaces and Graphical User Interface (GUI) components.

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CIS 049   **1.0 to 3.0 Units**
Computer and Information Science Honors
Prerequisite: Completion of 24.0 units of college credit with a minimum
*   GPA of 3.3; a minimum of 5.0 units in the discipline with a minimum*
*   grade of C; an ability to work independently; permission of the School*
*   Dean based on instructor availability.*
Course Advisory: SCC minimum English and Math standards.
Transferable to CSU
Hours: 48-162 lab by arrangement
Designed for honor students who intend to major in one of
the Computer and Information Science options. Students
are expected to design their own projects and must submit
them to the instructor for approval. Students may take
this course up to the maximum number of units over
multiple semesters.

CIS 050   Microcomputer Applications   3.0 Units
Course Advisory: SCC minimum English and Math standards; Basic
*   keyboarding skills at 30 wpm.*
Transferable to CSU
Hours: 48-54 lecture.
An introduction to microcomputers and the more
frequently used applications software. The course is
designed for the microcomputer user who is not a
computer science major. The purpose of this course
is to help students to understand the concepts and
fundamentals of working with: an operating system with
its associated graphical user interface, word processing,
spreadsheets, databases and presentation software.

CIS 052   UNIX Operating System   3.0 Units
Course Advisory: CIS 055 with a minimum grade of C; SCC minimum
*   English and Math standards.*
Transferable to CSU
Hours: 48-54 lecture.
An analysis of the UNIX operating system, its terminology,
user utilities, file structure, file security, commands,
shells, shell programming, system architecture, and
system administration. Emphasis will be placed on the
shell environment, shell programming and utilities. The
course will include hands-on exercises for the students
to complete using the UNIX operating system (Currently
taught using LINUX).

CIS 055   MS Windows Operating Systems   3.0 Units
Course Advisory: CIS 001 with a minimum grade of C; basic
*   keyboarding skills.*
Transferable to CSU
Hours: 48-54 lecture.
How to use the Graphical User Interface (GUI) and the
command line interface in carrying out system tasks in
the MS Windows operating systems. Topics include file
management, hard disk management, system tools, batch
files, connectivity, and the registry.

CIS 060   Introduction to the Internet   1.5 Units
Course Advisory: SCC minimum English and Math standards.
Transferable to CSU
Hours: 24-27 lecture.
Prepares students to use the Internet, a world wide
computer network. Emphasis is on introducing features
of the Internet, including electronic mail, the World Wide
Web, Gopher, FTP (file transfer protocol), Telnet, and
Usenet, as well as other Internet services and utilities.
Students will explore hands-on the vast resources of the
Internet, learn to access information using a variety of
methods, and will construct a simple Web page.

CIS 061   Creating Web Pages   3.0 Units
Course Advisory: CIS 001; SCC minimum English and Math standards.
Transferable to CSU
Hours: 48-54 lecture.
Prepares students to develop web sites that interact with
databases. Emphasis is on the creation of Web sites with
interactive Web pages, data access Web pages, and web
pages with interactive components. Students will explore
hands-on access to the Internet and an HTML editor to
create and maintain Web sites.

CIS 062   Creating Web Interactivity   3.0 Units
Course Advisory: A minimum grade of C in both CIS 001 and CIS 061;
*   SCC minimum English and Math standards.*
Transferable to CSU
Hours: 48-54 lecture.
Covers the creation of vector-based graphics, animation,
and interactivity within the Web environment. Emphasis
will be placed on applying design principles to the
elements of motion and interactivity. The basic operating
principles of Adobe Animate will be applied in order to
create Web content with animation, interactive buttons,
and sound. Issues of optimal delivery and web accessibility
will also be covered. A portfolio-quality professional level
capstone project will be developed and presented.

CIS 066   Microsoft Word   3.0 Units
Course Advisory: CIS 001 or CIS 050 with a minimum grade of C;
*   ability to keyboard at 30 wpm.*
Transferable to CSU
Hours: 48-54 lecture.
An in-depth study of the functions of the word processing
program. Students will learn how to use basic and
advanced program features to create and design business
documents.

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CIS 069   Multimedia For the Web   3.0 Units
Course Advisory: CIS 061 with a minimum grade of C; SCC minimum
   English and Math standards.
Transferable to CSU
Hours: 48-54 lecture.

An in-depth look at designing multimedia for the Web. Topics include developing graphic elements such as buttons, background textures and images for a Web site, using Cascading Style Sheets to position graphics, using Adobe Animate CC to create web site interactivity, adding audio and/or video to a Web site, and manipulating Web multimedia file formats.

CIS 070   Adobe Photoshop for the Web   3.0 Units
Course Advisory: CIS 001 or CIS 050 with a minimum grade of C;
   SCC minimum English and Math standards.
Transferable to CSU
Hours: 48-54 lecture.

Emphasizes the use of computer technology to create and manipulate raster and vector digital images. Students use Photoshop techniques to produce digital creations for the web. Layers, filter effects, blending modes, and other editing tools will be used to produce digital images appropriate for print and electronic reproduction. The elements of Photoshop for use in industry-standard web and print production will be explored.

CIS 073   Microsoft Excel   3.0 Units
Course Advisory: CIS 001 with a minimum grade of C; ability to
   keyboard at 30wpm.
Transferable to CSU
Hours: 48-54 lecture.

A thorough study of spreadsheet operation and enables the student to use the spreadsheet to perform mathematical computations and analysis. Students will create graphic representations of the information contained in a spreadsheet, perform list management routines, use functions, perform 'what if' analysis, customize toolbars and menus, and create macros using Visual Basic for Applications.

CIS 078   3.0 Units
Access - Database Management System
Course Advisory: CIS 001 with a minimum grade of C.
Transferable to CSU
Hours: 48-54 lecture.

An introduction to relational database management using microcomputers. Micosoft's Access database management program is used. Students will learn how to create and maintain relational database structures, organize and manipulate data, ask questions of the data, create custom forms for entering data and custom reports for printing the data. How to publish objects on the Internet's World Wide Web is presented. The student will learn how to construct a complete application combining previously created tables, queries, forms, and reports. Visual BASIC Applications (VBA) and Structured Query Language (SQL) are introduced. Advanced database design is explored and the student learns how to 'normalize' a database structure.

CIS 080   SQL Database Management Systems   3.0 Units
Course Advisory: CIS 001; CIS 078; SCC minimum English and Math
   standards.
Transferable to CSU
Hours: 48-54 lecture.

Provides knowledge and skills in advanced database systems that use the SQL language such as IBM's DB2, Oracle, Sybase and Microsoft's SQL Server. This course is designed for the end user, the database designer and the database administrator. Microsoft SQL Server 2008 is the database system currently used for this course.

CIS 081   Server-Side Web Programming   3.0 Units
Course Advisory: A minimum grade of C in both CIS 001 and CIS 061;
   SCC minimum English and Math standards.
Transferable to CSU
Hours: 48-54 lecture.

Emphasizes the creation of interactive web sites using a server-sided scripting language such as ASP.Net, CGI, or Perl. Topics include core features of the server-side scripting language, control structures, functions, arrays, form validations, regular expressions, environmental variables, and database-driven web applications.

CIS 083   Web Server Administration   3.0 Units
Course Advisory: CIS 001 and CIS 061 with a minimum grade of C;
   SCC minimum English and Math standards.
Transferable to CSU
Hours: 48-54 lecture.

Web server installation and administration for the internet and intranet. Topics covered include the installation, configuration, management and tuning of web services, security, online transaction processing, and FTP services.

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CIS 085   Digital Publishing with InDesign   3.0 Units
Course Advisory: CIS 001 or CIS 050 with a minimum grade of C; SCC minimum English and Math standards.
Transferable to CSU
Hours: 48-54 lecture.

An introduction to the graphics software program, Adobe InDesign. Students will learn to produce and publish publications, employing vector graphics, and typography as well as color and print management. This course will establish an understanding of the basic features in Adobe InDesign for use in both print and digital media.

CIS 087   Adobe Illustrator for the Web   3.0 Units
Course Advisory: CIS 001 or CIS 050 with a minimum grade of C; SCC minimum English and Math standards.
Transferable to CSU
Hours: 48-54 lecture.

An introduction to the graphics software program, Adobe Illustrator. Students will learn to create vector shapes, import, export and modify graphics, and use Illustrator tools. This course will establish an understanding of the basic features in Adobe Illustrator for use in digital media.

CIS 089   Essential Networking Technologies   3.0 Units
Course Advisory: CIS 001 with a minimum grade of C; SCC minimum English and Math standards.
Transferable to CSU
Hours: 48-54 lecture.

A general introductory overview of networking. Network design, media, protocols, architectures, operations, and administration will be discussed. Local area networks, wide area networks, and network connectivity (including Internet) are covered. This course is the foundation of all other network classes and helps prepare the student to be successful when taking various certified examinations.

CIS 090   Introduction to PowerPoint   1.5 Units
Course Advisory: CIS 001 or CIS 050 with a minimum grade of C; ability to keyboard 30 wpm.
Transferable to CSU
Hours: 24-27 lecture.

An introduction to features and design concepts utilized in developing powerful presentations using a package software such as Microsoft PowerPoint.

CIS 091   Microsoft Outlook   1.5 Units
Course Advisory: CIS 001 or CIS 050 with a minimum grade of C; basic keyboarding skills; SCC minimum English standard.
Transferable to CSU
Hours: 24-27 lecture.

An introduction to Outlook's features. Students will work with the Contact address book; Inbox and e-mail; Journal; Notes; Tasks; use Calendar to track and schedule appointments, events and meetings; work with forms and templates; use Outlook with other applications.

CIS 106   Computer Literacy   1.0 Unit
Course Advisory: SCC minimum English and Math standards.
Hours: 16-18 lecture, 8-9 lab.

A brief introduction to information technology for novices. Including an introduction to computer components, as well as hands-on activities utlizing the Windows operating system, word processing and spreadsheet software and the internet.

CIS 110   Wireless LANs   1.5 Units
Course Advisory: CIS 001 with a minimum grade of C; SCC minimum English and Math standards.
Hours: 24-27 lecture, 8-9 lab.

Planning, designing, installing and configuring wireless LANs. The course offers in-depth coverage of wireless networks with extensive step-by-step coverage of IEEE 802.11b/a/g/pre-n implementation, design, security, and troubleshooting.

CIS 112   3.0 Units
Introduction to Robotics Programming
Prerequisite: CIS 001.
Hours: 48-54 lecture.

Introduction to programming a 360-degree, 5-axis articulating arm via the Industry Standard Smart Terminal hand held computer and the PC interface. The student will learn all the basic physical parts of the system; how to utilize many of the 150 programming language commands to maniuplate the robot to do work in three dimensional work spaces over time; Industry Standard Robotic Safety Standards in the work place and how to implement.

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CIS 113   **3.0 Units**
Introduction to Programmable Logic Controllers
Prerequisite: CIS 001.
Hours: 48-54 lecture.
An introduction on how to design, program and operate the Programmable Logic Controller (PLC) to control a number of process applications used by industries all over the world. The Programmable Logic Controller (PLC) is a microprocessor-based controller designed to provide easily programmed control of almost any type of process. The student will learn to program Input Modules, Output Modules, Processor Module, Power Supply, Programming device, and I/O chassis.

CIS 162   A+ Computer Hardware Technology   4.0 Units
Course Advisory: SCC minimum English and Math standards.
Hours: 48-54 lecture, 48-54 lab.
Presents the structure of modern personal computer architecture including the names, purpose, and characteristics of components such as motherboards, CPUs, RAM, disk drive storage, printers and networks. This course also addresses upgrading computer components, optimizing computer performance, preventative maintenance, safety, and computer hardware troubleshooting. Prepares the student for CompTIA A+ Hardware Service Technician Certification.

CIS 164   **4.0 Units**
A+ Computer Operating Systems Technology
Course Advisory: CIS 162; SCC minimum English and Math standards.
Hours: 48-54 lecture, 48-54 lab.
Presents the purpose and capabilities of computer operating systems, operating system components and utilities. The course emphasizes initial investigation of personal computer operating systems and demonstrates the uses of the operating system and other software for isolating troubles and completing the repair of personal computers. Prepares the student for CompTIA A+ Operating Systems Technologies certification.

CIS 166   Computer Network+ Technology   4.0 Units
Course Advisory: SCC minimum English and Math standards.
Hours: 48-54 lecture, 48-54 lab.
Presents the architecture of computer networks, including the names, purpose, and characteristics of network components such as network interface card (NIC), hubs, routers, cabling and connectors; as well as topologies, protocols and standards. This course also addresses network implementation, network support and troubleshooting. Prepares the student for CompTIA Network+ Computer Network Certification. As a team, in a laboratory environment, the class will assemble and implement a complete network, with a server running a Microsoft server network operation system (NOS) and several computers running the Microsoft Windows XP Professional Operating System. All of the required cabling will be assembled in the lab by the students under the supervision of the instructor.

CIS 168   Computer Security+ Technology   4.0 Units
Prerequisite: CIS 166 with a minimum grade of C.
Hours: 48-54 lecture, 48-54 lab.
Presents the vulnerability, threats, and risks to data and other computer assets from spyware, Trojan horses, viruses, worms, and other security attacks. This course also addresses the fundamental policies and procedures for maintaining the security of a computer network. Prepares the student for the Computing Technology Industry Association's (CompTIA) Security+ Certification.

CIS 172   **1.5 Units**
Computer Forensics: Evidence Recovery
Course Advisory: SCC minimum English and Math standards.
Hours: 16-18 lecture, 24-27 lab.
An introduction to the physical aspects of data collection from computer systems and computer networks. Topics include the hardware and software used to collect data; the techniques used to ensure integrity and preserve data; and the requirements of preparing collected data for later forensic investigation. Students will learn to process a digital crime scene as well as the corporate environment for both criminal/civil cases and incident response.

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CIS 173   Computer Forensics Investigations   3.0 Units
Prerequisite: CIS 001.
Course Advisory: Eligibility for ENGL 001
Hours: 32-36 lecture, 48-54 lab.

An introduction to the tools and techniques of preserving and investigating digital evidence in a systematic and scientifically reliable manner using modern computer forensic software applications. The student is introduced to the interpretation and analysis of recovered data for the purpose of collecting legal evidence. The student is exposed to data in an array of formats and applications from several computer types and operating systems as well as deleted, encrypted, and damaged information. Evidence reporting practices are also introduced.

CIS 174   3.0 Units
Computer Forensics: Operating Systems Internals
Prerequisite: CIS 173 with a minimum grade of C.
Hours: 32-36 lecture, 48-54 lab.

Explore the internal workings of computer operating systems and perform forensic examinations of various operating systems. Students will analyze FAT, NTFS, Ext2, Ext3, UFS1, and UFS2 file systems and data structures. Students will learn to recognize systems that have been compromised by viruses or other intrusive programs, and will be able to locate corrupt, hidden or deleted data.