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 listed below. The Associate in Science Degree may be obtained by completing a total of 60 units, including the major, general education requirements, and electives. All courses in the major must be completed with a grade of C or better 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.

Not all courses are offered every semester, and the sequence of courses listed below is recommended, not required.

REQUIRED COURSES	**Units**
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 (UNIX OPERATING SYST)	3
CIS 020 Assembly Programming	3
Elective(s) selected from the Recommended Electives	3
Total Units	**33**

Select three (3) units from the following Recommended Electives:	**Units**
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
ACCT 001 Principles of Accounting - Financial	4
ACCT 002 Principles of Accounting – Managerial	4
BUS 005 Introduction to Business	3
OCED 090 Occupational Work Experience	1 - 8
OCED 091 General Work Experience	1 - 6

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 listed below. The Associate in Science Degree may be obtained by completing a total of 60 units, including the major, general education requirements, and electives. All courses in the major must be completed with a grade of C or better 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. Effective oral and written communication.

REQUIRED COURSES	**Units**
BUS 092 Business Communication	3
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
Total Units	**30**

Recommended Electives
CIS 020 Assembly Programming
CIS 022 Introduction to Programming
CIS 035 Introduction to Java Programming
CIS 060 Introduction to the Internet
CIS 066 Microsoft Word
CIS 080 SQL Database Management Systems
CIS 093 MS Publisher
ACCT 001 Principles of Accounting – Financial
ACCT 002 Principles of Accounting - Managerial
BUS 005 Introduction to Business
OCED 090 Occupational Work Experience
OCED 091 General Work Experience

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

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 listed below. The Associate in Science Degree may be obtained by completing a total of 60 units, including the major, general education requirements, and electives. All courses in the major must be completed with a grade of C or better 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 web site

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
Elective(s) selected from the Recommended Electives	3
Total Units	**33**

Recommended Electives (Select three 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

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

Microsoft Office Master Job-Direct Certificate

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

REQUIRED COURSES	**Units**
CIS 066 Microsoft Word	3
CIS 073 Microsoft Excel	3
CIS 090 Introduction to PowerPoint	1.5
CIS 093 MS Publisher	1.5
Total Units	**9**

Microsoft Office Specialist Job-Direct Certificate

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

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
CIS 093 MS Publisher	1.5
Total Units	**13.5**

Computer Information Science

Database Specialist Job-Direct Certificate

The required courses must be completed with a grade C or better.

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**

Web Developer Job-Direct Certificate

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

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**

Computer Applications Specialist Job-Direct Certificate

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

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**

Web Programmer Job-Direct Certificate

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

Program Outcomes

Students who complete the Job Direct Certificate will be able to:

1. Use design elements and an html editor in creating web pages.
2. Use visual basic to develop forms, tables, database, database queries, and reports.
3. Develop and publish to a web site a project incorporating Java programming for popups and client sided programming, dynamic web pages.

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**

Computer Information Science

CIS 001 3.0 Units
Introduction To Computer Science
Course Advisory: SCC minimum English and Math standards; keyboarding 30 wpm. 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, detailed analysis, design algorithms, and construct structured computer programs. *Three hours lecture, one hour lab.*

CIS 015 3.0 Units
Programming In Visual Basic.NET
Prerequisite: CIS 001 with a minimum grade of C; Course Advisory: SCC minimum English and MATH standards. An introductory course in 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. *Three hours lecture, one hour lab.*

CIS 020 3.0 Units
Assembly Programming
Prerequisite: CIS 015 or 022 or 035 with a minimum grade of C. Course Advisory: SCC minimum English and Math standards. A hardware-oriented programming course dealing with programming a computer at the assembler language level. Emphasis will be on the assembly language of computers. *Three hours lecture, one hour lab.*

CIS 021 3.0 Units
Discrete Structures for Computer Science
Course Advisory: Successful completion of MATH 104. Prerequisite: CIS 023 with a minimum grade of C; Math 020 with a minimum grade of C. This course is 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. *Two hours lecture, three hours lab.*

CIS 022 3.0 Units
Introduction to Programming
Prerequisite: CIS 001 with a minimum grade of C. Course Advisory: SCC minimum English and Math standards. 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.). *Three hours lecture, one hour lab.*

CIS 023 3.0 Units
Data Structures And Algorithms
Prerequisite: CIS 022 with a minimum grade of C. Course Advisory: SCC minimum English and Math standards. 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.) *Two hours lecture, three hours lab.*

Computer Information Science

CIS 035 3.0 Units
Introduction to Java Programming
Prerequisite: A minimum grade of C in CIS 015 or CIS 022 or CIS 023. *Course Advisory: SCC minimum English and Math standards.* 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. *Two hours lecture, three hours lab.*

CIS 049 1.0 to 3.0 Units
Computer Programming Honors
Prerequisite: Completion of 24 units of college credit with a minimum GPA of 3.3; a minimum of 5 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. 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. *Three to nine hours by arrangement.*

CIS 050 3.0 Units
Microcomputer Applications
Course Advisory: Basic keyboarding skills at 30 wpm; SCC minimum English and Math standards. This course will serve as 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. *Three hours lecture.*

CIS 052 3.0 Units
UNIX Operating System
Course Advisory: CIS 055 with a minimum grade of C or P; SCC minimum English and Math standards. This course will analyze 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). *Three hours lecture.*

CIS 055 3.0 Units
MS Windows Operating Systems
Course Advisory: CIS 001 with a minimum grade of C or P; basic keyboarding skills. Students will learn 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. *Three hours lecture.*

CIS 060 1.5 Units
Introduction to the Internet
Course Advisory: SCC minimum English and Math standards. Designed to prepare 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. *Three hours lecture. (8-week course).*

CIS 061 3.0 Units
Creating Web Pages
Course Advisory: CIS 001; SCC minimum English and Math standards. This course is designed to prepare 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. *Three hours lecture.*

CIS 062 3.0 Units
Creating Web Interactivity with Flash
Course Advisory: CIS 001 with a minimum grade of C or P; CIS 061 with a minimum grade of C or P; SCC minimum English and Math standards. This course 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 Macromedia Flash will be applied in order to create Web sites 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. *Three hours lecture.*

CIS 066 3.0 Units
Microsoft Word
Course Advisory: CIS 001 or CIS 050 with a minimum grade of C or P; ability to keyboard at 30 wpm. Provides 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. *Three hours lecture.*

CIS 068 3.0 Units
Object Oriented Game Programming With Flash
Prerequisite: CIS 062 with a minimum grade of C. Course Advisory: CIS 001 with a minimum grade of C or P; SCC minimum English and Math standards. Using solid programming techniques and the fundamental concepts of Object Oriented Programming, students will use Macromedia Flash ActionScript to create multimedia games. This process includes designing, coding, testing, debugging and documenting Flash ActionScript programs. Additionally, students will apply these concepts to the creation of game programs that utilize digital media including images, animation, audio, video, and text. *Three hours lecture.*

CIS 069 3.0 Units
Multimedia For The Web
Course Advisory: CIS 061 with a minimum grade of C; SCC minimum English and Math standards. Takes 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 Dynamic HTML to create web site interactivity, adding audio and/or video to a Web site, and manipulating Web multimedia file formats. *Three hours lecture.*

CIS 070 3.0 Units
Adobe Photoshop for the Web
Course Advisory: SCC minimum English and Math Standards. CIS 001 or CIS 050 with a grade of Pass or better or equivalent. This course 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 in this course. *Three hours lecture.*

CIS 072 1.5 Units
Extensible Markup Language (XML)
Course Advisory: CIS 001 with a minimum grade of C; CIS 061 with a minimum grade of C; SCC minimum English and Math standards. Introduces Extensible Markup Language. Students will learn how to create XML documents and use XML-based markup languages. *Three hours lecture (8-week course).*

CIS 073 3.0 Units
Microsoft Excel
Course Advisory: CIS 001 with a minimum grade of C or P; ability to keyboard at 30wpm. Provides 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. *Three hours lecture.*

CIS 075 3.0 Units
Client-Side Web Programming
Course Advisory: CIS 001 with a minimum grade of C; CIS 061 with a minimum grade of C; SCC minimum English and Math standards. Focuses on the enhancement of Web pages by adding interactivity and functionality through the use of client-side programming. *Three hours lecture.*

CIS 078 3.0 Units
Access - Database Management System
Course Advisory: CIS 001 with a minimum grade of C. 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. *Three hours lecture.*

CIS 080 3.0 Units
SQL Database Management Systems
Prerequisite: CIS 078 or equivalent with a minimum grade of C. Course Advisory: SCC minimum English and Math standards. Designed for the student who needs knowledge and skills about 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. *Three hours lecture.*

CIS 081 3.0 Units
Server-Side Web Programming
Course Advisory: CIS 001 with a minimum grade of C; CIS 061 with a minimum grade of C; SCC minimum English and Math standards. 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. *Three hours lecture.*

CIS 083 3.0 Units
Web Server Administration
Course Advisory: CIS 001 with a minimum grade of C; CIS 061 with a minimum grade of C; SCC minimum English and Math standards. This course covers 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. *Three hours lecture.*

CIS 085 3.0 Units
Digital Publishing with InDesign
Course Advisory: SCC minimum English and Math Standards CIS 001 or CIS 050 with a grade of Pass or better or equivalent. 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. *Three hours lecture.*

CIS 087 3.0 Units
Adobe Illustrator for the Web
Course Advisory: SCC minimum English and Math standards; CIS 001 or CIS 050 with a grade of P or better or equivalent. 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. *Three hours lecture.*

CIS 089 3.0 Units
Essential Networking Technologies
Course Advisory: CIS 001 with a minimum grade of C or P; SCC minimum English and Math standards. An introductory course starting with a general 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. *Three hours lecture.*

CIS 090 1.5 Units
Introduction To PowerPoint
Course Advisory: CIS 001 or CIS 050 with a minimum grade of C; ability to keyboard. This course introduces features and design concepts utilized in developing powerful presentations using a package software such as Microsoft PowerPoint. *Three hours lecture (8-week course).*

CIS 091 1.5 Units
Microsoft Outlook
Course Advisory: CIS 001 or CIS 050 with a minimum grade of C; basic keyboarding skills; SCC minimum English standard. Students get started using Outlook's features; working 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. *Three hours lecture (8-week course).*

CIS 093 1.5 Units
MS Publisher
Course Advisory: CIS 001 or CIS 050 with a minimum grade of C; SCC minimum English and Math standards. Provides 'hands-on' experience in the Microsoft Publisher desktop publishing computer program. Students will learn to produce camera ready, near-typeset quality reports, brochures, newsletters, labels, cards, and business forms. *Three hours lecture (8-week course).*

CIS 110 1.5 Units
Wireless Lans
Course Advisory: CIS 001 with a minimum grade of C or P; SCC minimum English and Math standards. This course is designed to instruct students on 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. *Three hours lecture, one hour lab (8-week course).*

CIS 111 1.5 Units
Web Design with Cascading Style Sheets
Course Advisory: CIS 061 with a minimum grade of C; SCC minimum English and Math standards. This course is intended for students and Web Professionals who have a working knowledge of Web design and HTML and want to use cascading style sheets to control the display and formatting on a Web site or any other application that uses CSS. *Three hours lecture (8-week course).*

CIS 112 3.0 Units
Introduction to Robotics Programming
Prerequisite: CIS 001. Course Advisory: SCC minimum English and Math standards. The student will be introduced 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. Additionally, the student will learn to utilize many of the 150 programming language commands to maniuplate the robot to do work in three dimensional work spaces over time. Furthermore, the student will learn and implement Industry Standard Robotic Safety Standards in the work place. *Three hours lecture.*

CIS 113 3.0 Units
Introduction to Programmable Logic Controllers
Prerequisite: CIS 001. Course Advisory: SCC minimum English and Math Standards. The student will be introduced to 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. *Three lecture hours.*

CIS 120 1.5 Units
Developing XML Web Services
Prerequisite: CIS 072. Course Advisory: CIS 001 and SCC minimum English and Math Standards. This course introduces the fundamental Web services architecture and its core technologies, including XML, XML Schema, SOAP, WSDL, and UDDI with the focus on writing, testing, and debugging a Web service such as a credit card validation Web service. *Three hours lecture, one hour lab by arrangement (8-week course).*

CIS 121 3.0 Units
PHP Programming with MySQL
Course Advisory: SCC minimum English and Math standards; CIS 061; CIS 001. This course teaches Web development with PHP and MySQL. It presents the basics of PHP and MySQL along with advanced topics including object-oriented programming and how to build Web sites that incorporate authentication and security. Upon completion of this course, students should be able to use PHP and MySQL to build professional quality, database-driven Web sites. Additionally, students will become proficient with the administration and maintenance of a MySQL database. *Three hours lecture, one hour lab by arrangement.*

CIS 162 4.0 Units
A+ Computer Hardware Technology
Course Advisory: SCC minimum English and Math standards. 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. (Formerly ECTN 126). *Three hours lecture, three hours lab.*

CIS 164 4.0 Units
A+ Computer Operating Systems Technology
Course Advisory: ECTN 126, SCC minimum English and Math standards. 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. (Formerly ECTN 128). *Three hours lecture, three hours lab.*

CIS 166 4.0 Units
Computer Network + Technology
Course Advisory: SCC minimum English and Math Standards. 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. (Formerly ECTN 122). *Three hours lecture, three hours lab.*

CIS 168 4.0 Units
Computer Security+ Technology
Prerequisite: A minimum grade of C in either CIS 166 or ECTN 122. Course Advisory: SCC minimum English and Math standards. 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. (Formerly ECTN 124). *Three hours lecture, three hours lab.*

CIS 172 1.5 Units
Computer Forensics: Evidence Recovery
Course Advisory: SCC minimum English and Math standards. Introduces the student to the physical aspects of data collection from computer systems and computer networks. The student is introduced to 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. (Formerly ECTN 172). *One hour lecture, one and one-half hours lab.*

CIS 173 3.0 Units
Computer Forensics Investigations
Prerequisite: CIS 001. Course Advisory: Eligibility for English 001 and SCC minimum Math standard. Introduces the student 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. 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. (Formerly ECTN 173). *Two hours lecture, three hours lab.*

CIS 174 3.0 Units
Computer Forensics: Operating Systems Internals
Prerequisite: Minimum grade of C in either CIS 173 or ECTN 173. Course Advisory: SCC minimum English and Math standards. Students will 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. (Formerly as ECTN 174). *Two lecture hours, three hours lab.*