

## DESIGN TECHNOLOGY



## CERTIFICATE OF ACHIEVEMENT

CAREER/TECHNICAL (MAJOR CODE: A2577)

**Program Student Learning Outcome Statement:**

- Organize and print different types of views used in mechanical design.
- Evaluate multiple mechanical drawings for correct form and fit.
- Evaluate and analyze mechanical drawings for errors.

**GAINFUL EMPLOYMENT:**

The U.S. Department of Education requires colleges to disclose a variety of information for any financial aid eligible program that “prepares students for gainful employment in a recognized occupation.”

Students who complete this program will have acquired the necessary analytical tools to successfully secure gainful employment in the field of study.

For more information regarding the data provided for this program and what it means to you as a student, please feel free to visit our SWC Gainful Employment website at: [www.swccd.edu/gainfulemployment](http://www.swccd.edu/gainfulemployment).

ENGR 101	Introduction to Engineering Careers	1
ENGR 110	Engineering Design and Graphics	3
ARCH 200	Introduction to Computer Aided Design (3) OR	3
CAD 220	Introduction to CADD/CAM Systems (3)	3
MATH 104	Trigonometry	3
ARCH 205	Advanced Architectural CAD (3) OR	3
CAD 222	CAD Mechanical Design I (3)	3
<b>Complete 6 units from electives</b>		<b>6</b>
<b>Total units</b>		<b>19</b>

**Electives:** CAD 223, 224, 272, 276.

# COMPUTER INFORMATION SYSTEMS

## SCHOOL OF BUSINESS AND TECHNOLOGY

**DEAN:** Mink Stavenga, DBA, Office 470K, 619-482-6569

**FACULTY:** John J. Davis, B.A.; Julie Grimes, M.S.;  
Robert Lingvall, M.S.; Kathleen Canney López, B.A.;  
Thomas Luibel, B.S.; Gregory Mohler, M.A.; Rick Kovacic, M.S.

**DEPARTMENT CHAIR:** Thomas Luibel, B.S.

**GENERAL DESCRIPTION**

Computer information systems is the study of the history, theories, principles, processes, procedures, structures, designs, applications, programs, languages, and management of modern information systems and technology. This department explores computer skills, data entry operations, information manipulation, control and data structures, software capabilities, program development, database management, design processes, Web applications, operating systems, and system analysis.

**CAREER OPTIONS**

Following is a sample of the career options available for computer information systems majors. Most require an associate in science degree, some require a bachelor's degree, and a few require a graduate-level degree: computer operator, data technician, systems analyst, computer maintenance technician, programmer, systems test engineer, software technician, documentation specialist, local area network (LAN) administrator, personal computer (PC) specialist, Web designer, database designer, and eCommerce technician and administrator positions available in allied professions of computer science, business, and industry.

**DEGREE/CERTIFICATE OPTIONS****MAJOR CODE****Associate in Arts Degree: Transfer Preparation**

Information Systems 01130

**Associate in Science Degree: Career/Technical**

CIS—Computer Programming With an Emphasis  
on Applications 02273



## Associate in Science Degree: Career/Technical— Computer Information Systems (CIS)

All CIS emphasis programs below

CIS—eCommerce Emphasis	02071
CIS—Internet Emphasis	02083
CIS—Internetwork Technician Emphasis	02088
CIS—Microcomputer Applications Emphasis	02335
CIS—Microcomputer Office and Technical Support Skills	02331
CIS—Operations/PC Support Specialist Emphasis	02079
CIS—Systems Programming Emphasis	02090
CIS—Web Flash Developer and Gaming Animator	02129
CIS—Website Designer and Developer	02121
CIS—Website eCommerce Administrator	02127

### Certificates of Achievement

CIS—Computer Programming With an Emphasis on Applications—Basic	02274
CIS—Entry-Level Database Administrator	02017
CIS—Internet Emphasis—Advanced	02093
CIS—Systems Programming Emphasis	02099
CIS—Web Flash Developer and Gaming Animator	02134
CIS—Web Search Engine Marketer	02334
CIS—Website Designer and Developer	02122
CIS—Web Shopping Cart Developer	02333

### Certificates of Proficiency

CIS—Ecommerce Emphasis—Basic	02072
CIS—Internet Emphasis—Basic	02074
CIS—Internetwork Technician Emphasis—Basic	02089
CIS—Microcomputer Applications Emphasis—Basic	02337
CIS—Web Database Programmer/Administrator— LAMP (Linux, Apache, MySQL, PHP)	02107
CIS—Web Designer	02108
CIS—Web Flash Designer	02109
C++ Certificate	01064
Project Management	02276
Social Media Marketer	01065
Software Quality Assurance	02013

Consult with a counselor to develop a Student Education Plan (SEP), which lists the courses necessary to achieve your academic goal.

### ATTENTION SMALL BUSINESS OWNERS AND ENTREPRENEURS:

Study small business management. Earn a Certificate that combines your education discipline with Entrepreneurship courses. For more information turn to Business Management—Entrepreneurship Education.

## ASSOCIATE IN ARTS DEGREE

### CIS—INFORMATION SYSTEMS

#### ASSOCIATE IN ARTS DEGREE

#### TRANSFER PREPARATION \* (MAJOR CODE: 01130)

Prepares students for many job opportunities needing skills in computer programming, systems analysis, end user application development, and administrative management. There is a demand for computer information system knowledge and skills for positions in finance, accounting and auditing, manufacturing, and marketing.

#### Program Student Learning Outcome Statement:

- Demonstrate the ability to analyze the information technology infrastructure needs of an organization and determine the appropriate applications to solve specific business problems.

ACCT 101	Principles of Accounting I	4
ACCT 102	Principles of Accounting II—Managerial	4
BUS 140	Business Law/The Legal Environment of Business	3
BUS 212	Business Communication	3
CIS 101	Introduction to Computers and Information Processing	4
ECON 101	Principles of Economics I	3
ECON 102	Principles of Economics II	3
MATH 119	Elementary Statistics	4
MATH 120	Calculus for Business Analysis	4


**Total units** **32**

To earn an associate degree, additional general education and graduation requirements must be completed. See page 64.

- \* Students planning to transfer to a four-year college or university should complete courses specific to the transfer institution of choice. University requirements vary from institution to institution and are subject to change. Therefore, it is important to verify transfer major preparation and general education requirements through consultation with a counselor in either the Counseling Center or Transfer Center. See catalog TRANSFER COURSES INFORMATION section on page 45 for further information.



## ASSOCIATE IN SCIENCE DEGREE

CIS—COMPUTER PROGRAMMING  
WITH AN EMPHASIS ON  
APPLICATIONS ASSOCIATE IN SCIENCE DEGREE  
CAREER TECHNICAL (MAJOR CODE: 02273)

Provides training in the theory and practice of computer programming and software design emphasizing business and computer applications. Prepares students for employment in the programming field and provides a strong foundation for students who desire to transfer to work toward a bachelor's degree in the area of information technology (IT).

## Program Student Learning Outcome Statement:

- Demonstrate the use of the appropriate user interface design and application tools to solve various programming problems.

BUS 120	Introduction to Business (3) OR	3
BUS 134	eBusiness I: Principles of Electronic Commerce (3)	
BUS 142	Business Ethics—Corporate and Personal	1
BUS 183	Business Mathematics	3
BUS 211	Communication in Business and Industry (3) OR	3
BUS 212	Business Communication (3)	
CIS 101	Introduction to Computers and Information Processing	4
CIS 106	Programming Logic and Design	3
CIS 115	Introduction to Programming Using C++	4
CIS 130	Microcomputer Disk Operating System	1
CIS 146	Introduction to Structured Query Language (SQL)	2
CIS 167	Quality Assurance and Software Testing	3
CIS 226	Operating Systems and Command Languages	3
CIS/BUS 239	Project Management	3
CIS 290–291	Work Experience CIS Applications I–II	2–4

## Plus Group A and Group B

## GROUP A: Open Source (10 units)

CIS 108	PHP (Personal Home Page) and MySQL	6
CIS 153	Programming Internet Visual/ Mobile Applications Using Java	4

## GROUP B: Microsoft (8 units)

CIS 117	Windows Programming Using Visual BASIC	4
CIS 139	Windowing Environments	1
CIS 166	C# Programming	3

**Total units** **53–55**

To earn an associate degree, additional general education and graduation requirements must be completed. See page 64.

CAREER/TECHNICAL—ASSOCIATE  
SCIENCE DEGREES WITH EMPHASISCOMPUTER INFORMATION  
SYSTEMS (CIS) 

## CAREER/TECHNICAL

Complete the Common Core classes listed below plus at least one emphasis from pages 162–164.

## COMMON CORE

BUS 211	Communication in Business and Industry (3) OR	3
BUS 212	Business Communication (3)	
BUS 290–293	Work Experience in Business I–IV	2–4
CIS/ELEC 10A	Microcomputer Repair and Service	2
CIS 101	Introduction to Computers and Information Processing	4
CIS 130	Microcomputer Disk Operating System	1
CIS 139	Windowing Environments	1
CIS 150	Introduction to Telecommunications and the Internet	1
CIS 226	Operating Systems and Command Languages	3

**Total units** **17–19**

Plus at least one emphasis from pages 162–164.

CIS—ECOMMERCE EMPHASIS ASSOCIATE IN SCIENCE DEGREE  
CAREER/TECHNICAL (MAJOR CODE: 02071)

The objective of the eCommerce curriculum is to prepare students for entry-level employment in the eCommerce industry. The curriculum is designed to provide students with basic and advanced eCommerce knowledge, along with the skills necessary to design, maintain, and administer a Web-based eCommerce site.

Students will understand the complexities of the marketplace for eCommerce and will become familiar with the legal and regulatory issues that affect eCommerce. Students will gain an understanding of the issues surrounding privacy, security, and the protection of intellectual property.

## Program Student Learning Outcome Statement:

- Compare and contrast strategies techniques and programming techniques of developing an online store.
- Discuss and apply methods to design, maintain, and administer a web-based eCommerce site.
- Distinguish and demonstrate an understanding of complex eCommerce marketplace legal and regulatory issues that affect eCommerce.
- Read, explain and develop web based technology and applications required to design dynamic teractive eCommerce sites.



BUS 134	eCommerce I: Principles of Electronic Commerce	3
CIS 146	Introduction to Structured Query Language (SQL)	2
CIS 103A	eCommerce IIIa—Miva Merchant Online Stores Using Fireworks (4)	3–4
	OR	
CIS 104	eCommerce IV—Beginning ColdFusion (3)	

<b>Plus Common Core courses for Computer Information Systems</b>		<b>17–19</b>
<b>Total units</b>		<b>25–28</b>

To earn an associate degree, additional general education and graduation requirements must be completed. See page 64.

## CIS–INTERNET EMPHASIS

### ASSOCIATE IN SCIENCE DEGREE CAREER/TECHNICAL (MAJOR CODE: 02083)

Designed to provide students with a fundamental understanding of Web pages for the Internet.

The objective of the curriculum is to prepare students for employment as Internet specialists, by learning how Internet technology can be used to re-engineer business processes. Students will gain programming, art, and telemedia skills using applications that are geared for designing World Wide Web pages. The Internet specialist designs a plan that specifies how a Website integrates with a company's existing infrastructure, and is also well versed in developing and managing sophisticated Web projects.

#### Program Student Learning Outcome Statement:

- Code web pages using scripts that create and manipulate scripting components such as label, button, text field, check boxes, radio buttons, list boxes, combo boxes, menus, windows, frames, forms, and dialog boxes with at least 90% accuracy to Universal Design best practices.

ART 192	Introduction to Digital Imaging	3
CIS/LIB 151	Research Using the Internet	1
CIS 152	Using HTML and CSS to Create Web Pages	2
CIS 158	Imaging for the World Wide Web (Photoshop)	3
TELE/ART 131	Introduction to Video and Film Production	3
TELE 163	Video Post-production and Special Effects	3

<b>Plus Common Core courses for Computer Information Systems</b>		<b>17–19</b>
<b>Total units</b>		<b>32–34</b>

To earn an associate degree, additional general education and graduation requirements must be completed. See page 64.

## CIS–INTERNETWORK TECHNICIAN EMPHASIS

### ASSOCIATE IN SCIENCE DEGREE CAREER/TECHNICAL (MAJOR CODE: 02088)

Provides intensive training in the theory and practice of the operation and maintenance of internetworking with special emphasis on switches, routers, and other specialized equipment. The objectives of the curriculum are to prepare students for employment as certified level technicians in the Internetworking industry.

#### Program Student Learning Outcome Statement:

- Demonstrate the ability to design, administer, configure, analyze, and explain network hardware and software connectivity using commands and interfaces that monitor and control traffic within and between devices.

CIS/ELEC 142	Networking Academy Fundamentals (Cisco Certification Preparation)	3
CIS 144A	Routers and Internetwork Fundamentals (Cisco Certification Preparation)	3
CIS 144B	Advanced Routers and LAN Networking	3
CIS 144C	Wide Area Networks Implementation and Support	3
CIS 147	Network Security	3
ELEC 15	Data, Voice, and Video Cable Installation	2
ELEC 260	Microcomputer Systems and A+ Certification	4
ELEC 266	Network Management for Technicians	4

<b>Plus Common Core courses for Computer Information Systems</b>		<b>17–19</b>
<b>Total units</b>		<b>42–44</b>

To earn an associate degree, additional general education and graduation requirements must be completed. See page 64.

## CIS–MICROCOMPUTER APPLICATIONS EMPHASIS

### ASSOCIATE IN SCIENCE DEGREE CAREER/TECHNICAL (MAJOR CODE: 02335)

Designed for those students with no prior computer experience who want to learn how to use the computer as a business and personal tool. Some vocational opportunities are accounting clerk, data entry clerk, bookkeeper, administrative assistant, general office clerk, and small office data processor.



Students will gain computer skills such as using appropriate office applications software, programming, and familiarity with information systems concepts in a microcomputer environment. Students should have typing skills or should complete \*BUS 70 Keyboarding I, as their first course of the program.

### Program Student Learning Outcome Statement:

- Demonstrate the ability to use computer device Browsers, Word Processors, Databases, and Spreadsheets to present formatted business and academic information using application functionality.

BUS 120	Introduction to Business	3
CIS/ELEC 10B	Microcomputer Hardware and Software Upgrade	2
CIS 121B	Word Processing—Microsoft Word	1
CIS 122B	Spreadsheet Software—Excel	1
CIS 133	Advanced Microcomputer Spreadsheets Software	1
CIS 134	Microcomputer Database Software—Access	1
CIS 137	Advanced Word Processing Software	1
CIS 146	Introduction to Structured Query Language (SQL)	2
<b>Plus Common Core courses for Computer Information Systems</b>		<b>17–19</b>
<b>Total units</b>		<b>29–31</b>

**Recommended Electives:** ACCT 12, 101;  
\*BUS 70; CIS 115, 117.

To earn an associate degree, additional general education and graduation requirements must be completed. See page 64.

- \* Students should have typing skills or should complete BUS 70 Keyboarding I as their first course of the program.

## CIS–OPERATIONS/PC SUPPORT SPECIALIST EMPHASIS



### ASSOCIATE IN SCIENCE DEGREE CAREER/TECHNICAL (MAJOR CODE: 02079)

Designed for strong background in micro and supermini computer operations and support. Students will learn hardware and software installation, the maintenance and repair of PCs and peripherals, and local area networking. Vocational opportunities include, but are not limited to, entry-level PC support specialist, computer operations, and network operations.

### Program Student Learning Outcome Statement:

- Demonstrate the ability to evaluate, connect, support, maintain, and troubleshoot computing devices on various basic networks.

ELEC 109/CIS 119	Office Support and Network Technician (6)	6
	OR	
CIS/ELEC 10B	Microcomputer Hardware and Software Upgrade (2)	6
	AND	
CIS/ELEC 14	Office Automation Equipment Repair (2)	6
	AND	
ELEC 15	Data, Voice, and Video Cable Installation (2)	6
CIS/ELEC 142	Networking Academy Fundamentals (Cisco Certification Preparation)	
ELEC 260	Microcomputer Systems and A+ Certification	4
<b>Plus Common Core courses for Computer Information Systems</b>		<b>17–19</b>
<b>Total units</b>		<b>30–32</b>

To earn an associate degree, additional general education and graduation requirements must be completed. See page 64.

## CIS–SYSTEMS PROGRAMMING EMPHASIS



### ASSOCIATE IN SCIENCE DEGREE CAREER/TECHNICAL (MAJOR CODE: 02090)

Provides training in the theory and practice of computer programming emphasizing industrial, business, and scientific applications. Prepares students for employment as entry-level programmers, system level software integrators (mini/micro environments), or software error recovery test and acceptance personnel using a variety of system software resources and associated techniques.

### Program Student Learning Outcome Statement:

- Demonstrate the ability to solve industrial, business, and scientific programming problems using a variety of programming languages, system software resources, and associated techniques.



CIS 106	Programming Logic and Design	3
CIS 115	Introduction to Programming Using C++	4
CIS 117	Windows Programming Using Visual BASIC	4
CIS 153	Programming Internet Visual/Mobile Applications Using Java	4
<b>Plus Common Core courses for Computer Information Systems</b>		<b>17–19</b>
<b>Total units</b>		<b>32–34</b>

**Recommended Electives:** CIS 133, 137, MATH 140.

To earn an associate degree, additional general education and graduation requirements must be completed. See page 64.

BUS 134	eBusiness I: Principles of Electronic Commerce	3
BUS 211	Communication in Business and Industry	3
CIS 124	Web Imaging With Fireworks	6
CIS 125	Flash Motion Graphics	6
CIS 126	Advanced Flash ActionScript	6
CIS 162	Website Universal Design	2
CIS 290–291	Work Experience CIS Applications I–II	2–4
<b>Total units</b>		<b>28–30</b>

To earn an associate degree, additional general education and graduation requirements must be completed. See page 64.

## CIS–WEB FLASH DEVELOPER AND GAMING ANIMATOR

### ASSOCIATE IN SCIENCE DEGREE CAREER/TECHNICAL (MAJOR CODE: 02129)

Prepares students to work in a computer animation studio, Web design firm, gaming firm, or to work independently as a freelance animator. Students will create interactive video games and Websites using Flash ActionScript.

#### Program Student Learning Outcome Statement:

- Create an animated video game, website, or movie short with clear content message.
- Create an animated video game, website or movie short using the industry standard animation software and programming script.

#### GAINFUL EMPLOYMENT:

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## CIS–WEBSITE DESIGNER AND DEVELOPER

### ASSOCIATE IN SCIENCE DEGREE CAREER/TECHNICAL (MAJOR CODE: 02121)

Prepares students to work in web design studios, computer firms, or as independent freelance Web designers or search engine marketers. Creates dynamic Websites using Dreamweaver with Cascading Style Sheets (CSS) and open-source shopping cart software. Develops maximum search engine visibility. Formats websites for computer and portable devices.

#### Program Student Learning Outcome Statement:

- Create a website which matches an industry standard for effective communication using search engine analytical tools to create a search engine marketing plan.

BUS 134	eBusiness I: Principles of Electronic Commerce	3
BUS 211	Communication in Business and Industry	3
CIS 123	Web Publishing With Dreamweaver (6) OR	6
CIS 108	PHP (Personal Home Page) and MySQL (6)	
CIS 124	Web Imaging With Fireworks	6
CIS 162	Website Universal Design	2
CIS 255	Web Search Engine Visibility	2
CIS 256	Web Shopping Cart With Advanced Dreamweaver	3
CIS 290–293	Work Experience CIS Applications I–IV	2–4
<b>Total units</b>		<b>27–29</b>

To earn an associate degree, additional general education and graduation requirements must be completed. See page 64.

## CIS-WEBSITE ECOMMERCE ADMINISTRATOR



### ASSOCIATE IN SCIENCE DEGREE CAREER/TECHNICAL (MAJOR CODE: 02127)

Designed to prepare students to work as a Website eCommerce administrator installing and implementing eCommerce software using open source and Macromedia/Miva implementations.

#### Program Student Learning Outcome Statement:

- Describe and summarize eCommerce business models and solutions to solve and determine current and future business requirements.

BUS 134	eBusiness I: Principles of Electronic Commerce	3
BUS 211	Communication in Business and Industry	3
CIS 108	PHP (Personal Home Page) and MySQL	6
CIS 109	Linux Operating System and Apache Web Server	6
CIS 123	Web Publisher With Dreamweaver	6
CIS 162	Website Universal Design	2
<b>Total units</b>		<b>26</b>

To earn an associate degree, additional general education and graduation requirements must be completed. See page 64.

## MICROCOMPUTER OFFICE AND TECHNICAL SUPPORT SKILLS



### ASSOCIATE IN SCIENCE DEGREE CAREER TECHNICAL (MAJOR CODE: 02331)

Trains students for positions as computer and technical support specialists to work in today's highly technical office environment.

#### Program Student Learning Outcome Statement:

- Access, communicate, and troubleshoot hardware and software issues using a variety of resources in today's microcomputer office settings.

BUS 120	Introduction to Business (3)	
	OR	3
BUS 134	eBusiness I: Principles of Electronic Commerce (3)	
BUS 142	Business Ethics—Corporate and Personal	1
BUS 183	Business Mathematics	3
BUS 211	Communication in Business and Industry (3)	
	OR	3
BUS 212	Business Communication (3)	
CIS/ELEC 10A	Microcomputer Repair and Service	2
CIS/ELEC 10B	Microcomputer Hardware and Software Upgrade	2
CIS 101	Introduction to Computers and Information Processing	4
CIS 117	Windows Programming Using Visual BASIC (4)	
	OR	2-4
CIS 146	Introduction to Structure Query Language (SQL) (2)	
CIS 133	Advanced Microcomputer Spreadsheets Software	1
CIS 139	Windows Environments	1
CIS 150	Introduction to Telecommunications and the Internet	1
CIS 152	Using XHTML and CSS to Create Web Pages	2
CIS 165	JavaScript Programming	3
CIS 290-291	Work Experience CIS Applications I-II	2-4
<b>Total units</b>		<b>30-34</b>

To earn an associate degree, additional general education and graduation requirements must be completed. See page 64.



## CERTIFICATES

### CIS–COMPUTER PROGRAMMING WITH AN EMPHASIS ON APPLICATIONS: BASIC

#### CERTIFICATE OF ACHIEVEMENT

##### CAREER/TECHNICAL (MAJOR CODE: 02274)

Provides training in the theory and practice of computer programming emphasizing business and computer applications. Prepares students for employment as entry-level programmers or programmer aides and provides a foundation for students who wish to prepare for a career in the field of information technology.

##### Program Student Learning Outcome Statement:

- Demonstrate the use of the appropriate user interface design and application tools to solve various basic programming problems.

#### GAINFUL EMPLOYMENT:

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Students who complete this program will have acquired the necessary analytical tools to successfully secure gainful employment in the field of study.

For more information regarding the data provided for this program and what it means to you as a student, please feel free to visit our SWC Gainful Employment website at: [www.swccd.edu/gainfulemployment](http://www.swccd.edu/gainfulemployment).

BUS 70	Keyboarding I	1
CIS 101	Introduction to Computers and Information Processing	4
CIS 106	Programming Logic and Design	3
CIS 115	Introduction to Programming Using C++	4
CIS 130	Microcomputer Disk Operating System	1
CIS 146	Introduction to Structure Query Language (SQL)	2
CIS 167	Quality Assurance and Software Testing	3
CIS 226	Operating Systems and Command Languages	3
<b>Total units</b>		<b>21</b>

## CIS–ECOMMERCE EMPHASIS: BASIC

#### CERTIFICATE OF PROFICIENCY

##### CAREER/TECHNICAL (MAJOR CODE: 02072)

##### Program Student Learning Outcome Statement:

- Demonstrate and develop an eCommerce storefront using current web programming technologies and compile and compare results to solve eCommerce requirements.
- Compute, interpret, and analyze eBusiness solution and demonstrate an understanding state-of-the-art information technology within web based eCommerce solutions.
- Research state-of-the-art eCommerce trends for integration into a eBusiness web based eCommerce solution for business applications.

BUS 134	eBusiness I: Principles of Electronic Commerce	3
CIS 146	Introduction to Structured Query Language (SQL)	2
CIS 103A	eCommerce IIIa—Miva Merchant Online Stores Using Fireworks	4
<b>Total units</b>		<b>9</b>





## CIS-ENTRY-LEVEL DATABASE ADMINISTRATOR



### CERTIFICATE OF ACHIEVEMENT

#### CAREER/TECHNICAL (MAJOR CODE: 02017)

Prepares students to work as a first-level database administrator within mainframe or distributed computing environments (Oracle Academy hosted).

#### Program Student Learning Outcome Statement:

- Categorize the basic SQL language subsets (DML, DDL, and DCL) and apply these (where appropriate) to prespecified business problems and associated tables while administering the database.

#### GAINFUL EMPLOYMENT:

The U.S. Department of Education requires colleges to disclose a variety of information for any financial aid eligible program that “prepares students for gainful employment in a recognized occupation.”

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BUS 96	Customer Service and Communication Techniques	1
BUS 290–293	Work Experience in Business I–IV	2–4
CIS 168A	Database Design	5
CIS 168B	Database Programming with SQL	5
CIS 168C	Database Programming with PL/SQL	5
<b>Total units</b>		<b>18–20</b>

## CIS-INTERNET EMPHASIS: BASIC

### CERTIFICATE OF PROFICIENCY

#### CAREER/TECHNICAL (MAJOR CODE: 02074)

#### Program Student Learning Outcome Statement:

- Code basic web pages using scripts that create and manipulate scripting components such as label, button, text field, check boxes, radio buttons, list boxes, combo boxes, menus, windows, frames, forms, and dialog boxes with at least 90% accuracy to Universal Design best practices.

CIS/LIB 151	Research Using the Internet	1
CIS 152	Using XHTML and CSS to Create Web Pages	2
CIS 158	Imaging for the World Wide Web (Photoshop)	3
<b>Total units</b>		<b>6</b>

## CIS-INTERNET EMPHASIS: ADVANCED

### CERTIFICATE OF ACHIEVEMENT

#### CAREER/TECHNICAL (MAJOR CODE: 02093)

#### Program Student Learning Outcome Statement:

- Code advanced web pages using scripts that create and manipulate scripting components such as label, button, text field, check boxes, radio buttons, list boxes, combo boxes, menus, windows, frames, forms, and dialog boxes with at least 90% accuracy to Universal Design best practices.

#### GAINFUL EMPLOYMENT:

The U.S. Department of Education requires colleges to disclose a variety of information for any financial aid eligible program that “prepares students for gainful employment in a recognized occupation.”

Students who complete this program will have acquired the necessary analytical tools to successfully secure gainful employment in the field of study.

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ART 192	Introduction to Digital Imaging	3
CIS/LIB 151	Research Using the Internet	1
CIS 152	Using XHTML and CSS to Create Web Pages	2
CIS 158	Imaging for the World Wide Web (Photoshop)	3
TELE/ART 131	Introduction to Video and Film Production	3
TELE 163	Video Post-production and Special Effects	3
<b>Plus Common Core courses for Computer Information Systems</b>		<b>17–19</b>
<b>Total units</b>		<b>32–34</b>

## CIS–INTERNETWORK TECHNICIAN EMPHASIS: BASIC

### CERTIFICATE OF PROFICIENCY CAREER/TECHNICAL (MAJOR CODE: 02089)

#### Program Student Learning Outcome Statement:

- Demonstrate the ability to design, administer, configure, analyze, and explain basic network hardware and software connectivity using commands and interfaces that monitor and control traffic within and between devices.

CIS/ELEC 142	Networking Academy Fundamentals (Cisco Certification Preparation)	3
CIS 144A	Routers and Internetwork Fundamentals (Cisco Certification Preparation)	3
CIS 144B	Advanced Routers and LAN Networking	3
CIS 144C	Wide Area Networks Implementation and Support	3
<b>Total units</b>		<b>12</b>

## CIS–MICROCOMPUTER APPLICATIONS EMPHASIS: BASIC

### CERTIFICATE OF PROFICIENCY CAREER/TECHNICAL (MAJOR CODE: 02337)

#### Program Student Learning Outcome Statement:

- Demonstrate the ability to use computer device Browsers, Word Processors, Databases, and Spreadsheets to present formatted business and academic information using basic application functionality.

BUS 70	Keyboarding I *	1
BUS 120	Introduction to Business	3
CIS/ELEC 10A	Microcomputer Repair and Service	2
CIS 121B	Word Processing—Microsoft Word	1
CIS 122B	Spreadsheet Software—Excel	1
CIS 133	Advanced Microcomputer Spreadsheets Software	1
CIS 134	Microcomputer Database Software—Access	1
CIS 137	Advanced Word Processing Software	1
CIS 139	Windowing Environments	1
CIS 150	Introduction to Telecommunications and the Internet	1
<b>Total units</b>		<b>13</b>

- \* Students who know touch-typing do not need to take BUS 70.

## CIS–SYSTEMS PROGRAMMING EMPHASIS



### CERTIFICATE OF ACHIEVEMENT CAREER/TECHNICAL (MAJOR CODE: 02099)

#### Program Student Learning Outcome Statement:

- Analyze and report outcomes from Test Report Presentations.



**GAINFUL EMPLOYMENT:**

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CIS 106	Programming Logic and Design	3
CIS 115	Introduction to Programming Using C++	4
CIS 117	Windows Programming Using Visual BASIC	4
CIS 153	Programming Internet Visual/Mobile Applications Using Java	4

<b>Plus Common Core courses for Computer Information Systems</b>	<b>17–19</b>
<b>Total units</b>	<b>32–34</b>

**Recommended Electives:** CIS 133, 137, MATH 140.

## CIS–WEB DATABASE PROGRAMMER/ ADMINISTRATOR–LAMP (LINUX, APACHE, MYSQL, PHP)

**CERTIFICATE OF PROFICIENCY****CAREER/TECHNICAL (MAJOR CODE: 02107)**

Designed to prepare students to work as a first-level Database/Web Administrator support specialists installing and implementing the Linux, Apache, MySQL, PHP (LAMP) open source software platform.

**Program Student Learning Outcome Statement:**

- Use government regulations to evaluate LAMP stack and other website presentation technologies for accessibility compliance.

CIS 108	PHP (Personal Home Page) and MySQL	6
CIS 109	Linux Operating System and Apache Web Server	6
CIS 162	Website Universal Design	2
<b>Total units</b>	<b>14</b>	

## CIS–WEB DESIGNER

**CERTIFICATE OF PROFICIENCY****CAREER/TECHNICAL (MAJOR CODE: 02108)**

Prepares students to work in an Internet Web design studio or to work independently as a freelance project consultant. Students receive training in creating, designing, testing, uploading, and maintaining multimedia Websites.

**Program Student Learning Outcome Statement:**

- Create a site statement and site contract for a website client.
- Upload a website and quality-control test it for accuracy.
- Work in groups to create a website component. Students will evaluate peers' work.
- Create a fully functional multimedia website.

CIS 123	Web Publishing with Dreamweaver	6
CIS 124	Web Imaging with Fireworks	6
CIS 162	Website Universal Design	2
<b>Total units</b>	<b>14</b>	

## CIS–WEB FLASH DESIGNER

**CERTIFICATE OF PROFICIENCY****CAREER/TECHNICAL (MAJOR CODE: 02109)**

Designed to prepare students to work in computer-animation studios, Web design firms, or to work independently as freelance project consultants. Students will learn to create basic vector and raster images for the Web.

**Program Student Learning Outcome Statement:**

- Create an animated website or movie with clear content message.
- Create an animated website or short animated film using the industry standard animation software.

CIS 125	Flash Motion Graphics	6
CIS 126	Advanced Flash ActionScript	6
CIS 162	Website Universal Design	2
<b>Total units</b>	<b>14</b>	



## CIS–WEB FLASH DEVELOPER AND GAMING ANIMATOR



### CERTIFICATE OF ACHIEVEMENT

#### CAREER/TECHNICAL (MAJOR CODE: 02134)

Prepares students to work in a computer animation studio, Web design firm, gaming firm, or to work independently as a freelance animator. Students will create interactive video games and Websites using Flash ActionScript.

#### Program Student Learning Outcome Statement:

- Create an animated video game, a website, or a movie with clear content message.
- Create animated video game, a website, or movie short using the industry standard animation software and scripting code.

#### GAINFUL EMPLOYMENT:

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BUS 134	eBusiness I: Principles of Electronic Commerce	3
BUS 211	Communication in Business and Industry	3
CIS 124	Web Imaging With Fireworks	6
CIS 125	Flash Motion Graphics	6
CIS 126	Advanced Flash ActionScript	6
CIS 162	Website Universal Design	2
CIS 290–291	Work Experience CIS Applications I–II	2–4
<b>Total units</b>		<b>28–30</b>

## CIS–WEB SEARCH ENGINE MARKETER



### CERTIFICATE OF ACHIEVEMENT

#### CAREER/TECHNICAL (MAJOR CODE: 02334)

Builds a marketing strategy to ensure top placement of a website in web searches. Provides hands-on introduction to search engine visibility, including optimization techniques. keywords, trends, and measuring tools. Includes designing for portable devices and using social media.

#### Program Student Learning Outcome Statement:

- Prepare a written proposal for search engine positioning strategies for a client website.
- Compile data from web search engine measurement tools and analyze data to formulate a search engine strategy presentation for a client website.
- Work with colleagues in a professional manner to produce a team website positioning project.
- Write a summary of research to identify the major search engines, the major strategies for visibility, and a before-and-after analysis of keyword testing.

#### GAINFUL EMPLOYMENT:

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CIS 123	Web Publishing with Dreamweaver (6) OR	6
CIS 108	PHP (Personal Home Page) and MySQL (6)	
CIS 124	Web Imaging with Fireworks	6
CIS 152	Using XHTML and CSS to Create Web Pages	2
CIS 162	Website Universal Design	2
CIS 255	Web Search Engine Visibility	2
<b>Total units</b>		<b>18</b>



## CIS–WEB SHOPPING CART DEVELOPER



### CERTIFICATE OF ACHIEVEMENT

#### CAREER/TECHNICAL (MAJOR CODE: 02333)

Builds dynamic multimedia websites with shopping cart. Uses open-source software to build an online storefront and catalog. Uses effective business practices and design techniques., follows accessibility standards to sell products online to target consumer audiences. Provides hand-on instruction with multimedia equipment, uploading to the web, and quality control testing.

#### Program Student Learning Outcome Statement:

- Create an online catalog of items for sale to include name, image, description, and price.
- Test the online shopping cart functions for quality control to include effective solutions for inventory, price calculation, payment method on each customer order.
- Simulate work in a web design studio; will work with colleagues and customers in a professional manner with a service attitude.
- Research current techniques using open-source software for building an online shopping cart and will write a report evaluating the feasibility of using this technique in the office.

#### GAINFUL EMPLOYMENT:

The U.S. Department of Education requires colleges to disclose a variety of information for any financial aid eligible program that “prepares students for gainful employment in a recognized occupation.”

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CIS 123	Web Publishing with Dreamweaver	6
CIS 124	Web Imaging with Fireworks	6
CIS 152	Using XHTML and CSS to Create Web Pages	2
CIS 162	Website Universal Design	2
CIS 256	Web Shopping Cart with Advanced Dreamweaver	3
<b>Total units</b>		<b>19</b>

## CIS–WEBSITE DESIGNER AND DEVELOPER



### CERTIFICATE OF ACHIEVEMENT

#### CAREER/TECHNICAL (MAJOR CODE: 02122)

#### Program Student Learning Outcome Statement:

- Create a website which matches an industry standard for effective communication.
- Use the major search engine analytical tools to create a search engine marketing plan for a website.
- Work in group projects with a diverse population and will exhibit a professional demeanor and service attitude.
- Use layout and authoring and shopping cart and marketing software to create a website with shopping cart and its online marketing plan.

#### GAINFUL EMPLOYMENT:

The U.S. Department of Education requires colleges to disclose a variety of information for any financial aid eligible program that “prepares students for gainful employment in a recognized occupation.”

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BUS 134	eBusiness I: Principles of Electronic Commerce	3
BUS 211	Communication in Business and Industry	3
CIS 123	Web Publishing With Dreamweaver (6) OR	6
CIS 108	PHP (Personal Home Page) and MySQL (6)	
CIS 124	Web Imaging With Fireworks	6
CIS 152	Using XHTML and CSS to Create Web Pages	2
CIS 162	Website Universal Design	2
CIS 255	Web Search Engine Visibility	2
CIS 256	Web Shopping Cart With Advanced Dreamweaver	3
CIS 290–293	Work Experience CIS Applications I–IV	2–4
<b>Total units</b>		<b>29–31</b>



## C++ CERTIFICATE

### CERTIFICATE OF PROFICIENCY

#### CAREER/TECHNICAL (MAJOR CODE: 01064)

Provides training in the C++ programming language to prepare for employment in the software industry.

#### Program Student Learning Outcome Statement:

- Develop strategies to work with diverse groups utilizing technology.

CIS 106	Programming Logic and Design	3
CIS 115	Introduction to Programming Using C++	4
CIS 167	Quality Assurance and Software Testing	3
<b>Total units</b>		<b>10</b>

## PROJECT MANAGEMENT

### CERTIFICATE OF PROFICIENCY

#### CAREER/TECHNICAL (MAJOR CODE: 02276)

Provides training that includes the application of project management skills for employment in industry.

#### Program Student Learning Outcome Statement:

- Utilize the principles of project management and software logic and design to inspect, analyze, edit, and document technology in a tracking system.
- Implement and execute test plan and complete test report according to time line.
- Use regression testing of algorithmic solutions to identify error forcing and code coverage according to time line.

BUS 211	Communication in Business and Industry (3) OR	3
BUS 212	Business Communication (3)	3
CIS 167	Quality Assurance and Software Testing	3
CIS 106	Programming Logic and Design (3) OR	3
BUS/CIS 239	Project Management (3)	3
<b>Total units</b>		<b>9</b>

## SOCIAL MEDIA MARKETER

### CERTIFICATE OF PROFICIENCY

#### CAREER/TECHNICAL (MAJOR CODE: 01065)

The Social Media Marketer will form and optimize social media networks, design and implement a social media strategy for personal or commercial use. Covers hands-on use of exciting Web 2.0 interactivity for commercial and personal use and optimizes social networks. Designs and implements social media strategies with multiple platforms and measure success. Includes RSS feeds, blogs, wikis, casts, interactive video and photo sites, cloud computing industry.

CIS 255	Web Search Engine Visibility	2
CIS 162	Website Universal Design	2
CIS 152	Using XHTML and CSS to Create Web Pages	2
CIS 257	Web 2.0 Social Media Strategies	3
<b>Total units</b>		<b>9</b>

## SOFTWARE QUALITY ASSURANCE

### CERTIFICATE OF PROFICIENCY

#### CAREER/TECHNICAL (MAJOR CODE: 02013)

Provides software quality assurance training and industry software testing techniques to prepare for employment in the software development industry.

#### Program Student Learning Outcome Statement

- Compare and contrast unit, integration, system, and regression testing. Design a document that will list all activities, components, and people involved in all tests.
- Analyze and report outcomes from Test Report Presentations.

CIS 106	Programming Logic and Design	3
CIS 167	Quality Assurance and Software Testing	3
BUS 211	Communication in Business and Industry (3) OR	3
BUS 212	Business Communication (3)	3
<b>Total units</b>		<b>9</b>

