



COMPUTER SCIENCE & INFORMATION SYSTEMS

CSIS *A.S. Degrees*

- Business Computer Applications
- Computer Networking
- Computer Programming
- Programming for the Internet
- Scientific Programming
- UNIX Operating System

CSIS *Certificates of Achievement*

- Business Computer Applications
- Computer Networking
- Computer Programming
- Programming for the Internet
- Scientific Programming
- UNIX Operating System

CSIS *Certificates of Proficiency*

- Computational Preparation for Bioinformatics
- Computer Hardware
- Computer Networking
- Telecommunications/Network Cabling
- Web Page Production Specialist

ROP Certificates - see page 228

- Networking Essentials
- Router Theory and Router Technologies
- Advanced Routing/Switching/WAN
- Computer Office Applications
- Operating Systems
- PC Hardware
- C++ Programming I
- Applied Networking

Contact:
(408) 848-4719
tps@gavilan.edu

Computational Preparation for Bioinformatics *Certificate of Proficiency*

CORE COURSES:20 units

ADDITIONAL REQUIREMENTS:

CGD 160 Technical Desktop Publishing and Graphics.4 units
 CGD 110 Computer Graphics Lab4 units
 Total Units for Certificate of Achievement: 28 UNITS

This Certificate of Proficiency will prepare students for computational work in Bioinformatics in industry and is for 4-year college transfer students. Students will need a BA or higher degree in Biology or Computer Science, or related disciplines to use these computational skills in bioinformatics.

General Education Requirements: A student may complete the Gavilan College AA/AS general education, the CSU-GE Breadth, or the IGETC pattern. See a counselor for details.

Business Computer Applications

A.S. Degree

Choose 21 units from the following list of courses:

Choose only one of the following two courses:

CSIS 1 Computer Literacy - MS Office (2 units)
 CSIS 2 Computers in Business - MS Office (4 units)

CSIS 6 Web Page Authoring I (2 units)
 CSIS 8 Introduction to the Internet (1 unit)
 CSIS 10 BASIC Programming (2 units)
 CSIS 72 Desktop Publishing - QuarkXPress (3 units)
 CSIS 73 Desktop Publishing - Adobe InDesign (3 units)
 CSIS 75 PhotoShop I - Adobe Photoshop (3 units)
 CSIS 121 Spreadsheet - MS Excel (1-2 units)
 CSIS 124 Windows Fundamentals (1 unit)
 CSIS 126 Word Processing - MS Word (2 units)
 CSIS 128 Database - MS Access (2 units)
 CSIS 129 Presentation Graphics - MS PowerPoint (1 unit)
 CSIS 132 Intermediate Word Processing - MS Word (2 units)
 CSIS 134 Intermediate Excel (2 units)
 CSIS 181 PC Hardware (4 units)
 CSIS 182 Operating Systems (4 units)

Total Units for Major:21 UNITS

Plus completion of general education requirementsunits vary

Total Units Required for A.S.: minimum of 60 UNITS

Recommended Electives: CSIS 7 and other desktop publishing courses

Program Learning Outcome: After completing this degree a student will be able to use a variety of business software, including word processors and spreadsheets to create business letters, reports and other business documents.

Computer Applications prepares students for positions utilizing a wide variety of popular operating systems and business application software. The computer applications taught here, including word processing, spreadsheets, databases, graphics, and desktop publishing are used in most business environments. This degree is also appropriate for retraining and for improving promotional opportunities.

Career Opportunities: general office work, document preparation, technical support, help desk training and support, word processing, administrative secretary, administrative services.

Business Computer Applications

Certificate of Achievement

Choose 21 units from the following list of courses:

Choose only one of the following two courses:

- | | |
|--------|---------------------------------------------|
| CSIS 1 | Computer Literacy - MS Office (2 units) |
| CSIS 2 | Computers in Business - MS Office (4 units) |

- | | |
|----------|--------------------------------------------------|
| CSIS 6 | Web Page Authoring I (2 units) |
| CSIS 8 | Introduction to the Internet (1 unit) |
| CSIS 10 | BASIC Programming (2 units) |
| CSIS 72 | Desktop Publishing - QuarkXPress (3 units) |
| CSIS 73 | Desktop Publishing - Adobe InDesign (3 units) |
| CSIS 75 | PhotoShop I - Adobe Photoshop (3 units) |
| CSIS 121 | Spreadsheet - MS Excel (1-2 units) |
| CSIS 124 | Windows Fundamentals (1 unit) |
| CSIS 126 | Word Processing - MS Word (2 units) |
| CSIS 128 | Database - MS Access (2 units) |
| CSIS 129 | Presentation Graphics - MS PowerPoint (1 unit) |
| CSIS 132 | Intermediate Word Processing - MS Word (2 units) |
| CSIS 134 | Intermediate Excel (2 units) |
| CSIS 181 | PC Hardware (4 units) |
| CSIS 182 | Operating Systems (4 units) |

Total Units for Certificate of Achievement:21 UNITS

Recommended Electives: CSIS 7 and other desktop publishing courses

Computer Hardware *Certificate of Proficiency*

CSIS 181	PC Hardware.....	.4 units
CSIS 182	Operating Systems.....	.4 units
Total Units for Certificate of Proficiency:		<u>8 UNITS</u>

Recommended Electives: CSIS 122, CSIS 2 or 2L

Program Learning Outcome: After completing this Certificate of Achievement a student will be able to use a variety of business software, including word processors and spreadsheets to create business letters, reports and other business documents.

Computer Applications prepares students for positions utilizing a wide variety of popular operating systems and business application software. The computer applications taught here, including word processing, spreadsheets, databases, graphics, and desktop publishing are used in most business environments. This degree is also appropriate for retraining and for improving promotional opportunities.

Career Opportunities: general office work, document preparation, technical support, help desk training and support, word processing, administrative secretary, administrative services

Students receiving this certificate will have job entry skills in computer hardware repair. Students will be eligible to take the industry A+ hardware exam for certification.

TRANSFER STUDENTS

Apply for an Associate's Degree (AA/AS) also.

It will be your first college degree!

Computer Networking

A.S. Degree

CSIS 175A	Networking Essentials . . . . .	.4 units
CSIS 175B	Router Theory & Router Technologies . . . . .	.4 units
CSIS 175C	Advanced Routing/Switching/WAN . . . . .	.4 units
CSIS 48	UNIX/Linux Operating System . . . . .	.4 units
CSIS 181	PC Hardware . . . . .	.4 units
CSIS 182	Operating Systems . . . . .	.4 units
Total Units for Major:		24 UNITS

Plus completion of general education requirements units vary
 Total Units Required for A.S.: minimum of 60 UNITS

General Education Requirements: A student may complete the Gavilan College AA/AS general education, the CSU-GE Breadth, or the IGETC pattern. See a counselor for details.

Certificate of Achievement

CSIS 175A	Networking Essentials . . . . .	.4 units
CSIS 175B	Router Theory & Router Technologies . . . . .	.4 units
CSIS 175C	Advanced Routing/Switching/WAN . . . . .	.4 units
CSIS 48	UNIX/Linux Operating System . . . . .	.4 units
CSIS 181	PC Hardware . . . . .	.4 units
CSIS 182	Operating Systems . . . . .	.4 units
Total Units for Certificate of Achievement:		24 UNITS

Certificate of Proficiency

Certificate updated Jan/2008

Choose one:

CSIS 175A	Networking Essentials (4 units)	
CSIS 178	Applied Networking (4 units)	
		.4 units

Choose two:

CSIS 175B	Router Theory & Router Technologies (4 units)	
CSIS 175C	Advanced Routing/Switching/WAN (4 units)	
CSIS 179	Introduction to Information Security (4 units)	
CSIS 183	Introduction to Microsoft Servers (4 units)	
		.8 units
Total Units for Certificate of Proficiency:		12 UNITS

Recommended courses to be taken before starting (or concurrent with) the Networking sequence: CSIS 2L, 48, 181, 274; MATH 205

Program Learning Outcomes: After completing this degree a student will be able to:

- ▶ work individually and in teams
- ▶ install and test hardware and software necessary for network connectivity.
- ▶ set up a connection with a remote host, employing appropriate commands.

Computer Networking is designed to provide entry-level skills and knowledge for students to enter the networking profession. Students will be eligible to take the industry A+ hardware exam and the Cisco Certified Network Administrator (CCNA) exam for certification. The program also provides a solid foundation in network technology for students who plan to pursue further education in the networking field at a four year college.

Career Opportunities: network technician, network maintenance, network Help Desk, Assistant Network Administrator, PC/network installation.

Program Learning Outcomes: After completing this Certificate of Achievement a student will be able to:

- ▶ work individually and in teams
- ▶ install and test hardware and software necessary for network connectivity.
- ▶ set up a connection with a remote host, employing appropriate commands.

Students receiving this certificate will have job skills for the computer networking field. Students will be eligible for Cisco Certified Network Administrator (CCNA) certification and the A+ hardware certification exams.

This is a three-course program with the Cisco Networking Academy. Upon completion, students will be eligible for industry certification. (Cisco Certified Network Administrator - CCNA)

Computer Programming

A.S. Degree

CSIS 46	C++ Programming II	4 units
CSIS 48	UNIX/Linux Operating System	4 units

Choose one:

CSIS 45	C++ Programming I (4 units)	
CSIS 5	C++ Scientific Programming (3 units)	
		3-4 units

Choose 10 units:

CSIS 6	Web Page Authoring I (2 units)	
CSIS 12/12L	Assembly Language Programming (4 units)	
CSIS 24	Java Programming I (4 units)	
CSIS 44	C#.NET Programming (4 units)	
CSIS 51	Visual Basic .NET Programming (4 units)	
CSIS 54/54L	Perl Programming (4 units)	
CSIS 78	Web Sites with SQL and PHP (4 units)	
		10 units

Total Units for Major: 21-22 UNITS

Plus completion of general education requirements units vary

Total Units Required for A.S.: minimum of 60 UNITS

Recommended Electives:

For transfer majors: MATH 1A and MATH 1B For non-transfer majors: MATH 233

Certificate of Achievement

CSIS 46	C++ Programming II	4 units
CSIS 48	UNIX/Linux Operating System	4 units

Choose one:

CSIS 45	C++ Programming I (4 units)	
CSIS 5	C++ Scientific Programming (3 units)	
		3-4 units

Choose 10 units:

CSIS 6	Web Page Authoring I (2 units)	
CSIS 12/12L	Assembly Language Programming (4 units)	
CSIS 24	Java Programming I (4 units)	
CSIS 44	C#.NET Programming (4 units)	
CSIS 51	Visual Basic .NET Programming (4 units)	
CSIS 54/54L	Perl Programming (4 units)	
CSIS 78	Web Sites with SQL and PHP (4 units)	
		10 units

Total Units for Certificate of Achievement: 21-22 UNITS

Additional programming courses are recommended.

Program Learning Outcomes: After completing this degree a student will be able to:

- ▶ create programs in three different languages that use control flow statements such as if and switch statements.
- ▶ create programs in three different languages that use loop statements such as for and while statements.

Computer Programming prepares students for entry-level programming in a wide variety of occupations. Many of the courses in this degree will be needed for students transferring to a university to study Computer Science. Students planning to transfer need to research lower division major requirements at the transfer destination of their choice.

Career Opportunities: computer programming, application programming, Help Desk technical support, data base specialist and Web programmer.

Program Learning Outcomes: After completing this Certificate of Achievement a student will be able to:

- ▶ create programs in three different languages that use control flow statements such as if and switch statements.
- ▶ create programs in three different languages that use loop statements such as for and while statements.

Computer Programming prepares students for entry-level programming in a wide variety of occupations. Many of the courses in this Certificate of Achievement will be needed for students transferring to a university to study Computer Science. Students planning to transfer need to research lower division major requirements at the transfer destination of their choice.

Career Opportunities: computer programming, application programming, Help Desk technical support, data base specialist and Web programmer.

Programming for the Internet

CSIS 6	Web Page Authoring I . . . . .	.2 units
CSIS 51	Visual Basic .NET Programming . . . . .	.4 units
CSIS 54/54L	Perl Programming . . . . .	.4 units
CSIS 84	JavaScript Programming . . . . .	.2 units

Choose one:

CSIS 45	C++ Programming I (4 units)	
CSIS 5	C++ Scientific Programming (3 units)	
	.....	3-4 units

Choose courses for at least 4 units:

CSIS 7	Web Page Authoring II (2 units)	
CSIS 75	PhotoShop I - Adobe Photoshop (3 units)	
CSIS 78	SQL and Database Management Systems (3 units)	
CSIS 85	Web Design I: Dreamweaver (2 units)	
CSIS 110	Interactive Animation: Flash (3 units)	
	.....	.4 units

Total Units for Major: 19-20 UNITS

Plus completion of general education requirements units vary

Total Units Required for A.S.: minimum of 60 UNITS

Recommended Elective: MATH 233

Certificate of Achievement

CSIS 6	Web Page Authoring I . . . . .	.2 units
CSIS 51	Visual Basic .NET Programming . . . . .	.4 units
CSIS 54/54L	Perl Programming . . . . .	.4 units
CSIS 84	JavaScript Programming . . . . .	.2 units

Choose one:

CSIS 45	C++ Programming I (4 units)	
CSIS 5	C++ Scientific Programming (3 units)	
	.....	3-4 units

Choose courses for at least 4 units:

CSIS 7	Web Page Authoring II (2 units)	
CSIS 75	PhotoShop I - Adobe Photoshop (3 units)	
CSIS 78	SQL and Database Management Systems (3 units)	
CSIS 85	Web Design I: Dreamweaver (2 units)	
CSIS 110	Interactive Animation: Flash (3 units)	
	.....	.4 units

Total Units for Certificate of Achievement: 19-20 UNITS

Recommended Elective: MATH 233

Program Learning Outcomes: After completing this degree a student will be able to:

- ▶ create, modify, and program web pages with images and forms.
- ▶ create programs in three different languages that use loop statements such as for and while statements.

Programming for the Internet prepares students for entry-level positions developing and maintaining Internet and Intranet web pages. The courses prepare students to create, modify, and program web pages, such as those used in electronic commerce. Students will gain knowledge in both technical and artistic sides of this profession.

Career Opportunities: web page developer, web programmer, technical support, webmaster.

Program Learning Outcomes: After completing this Certificate of Achievement a student will be able to:

- ▶ create, modify, and program web pages with images and forms.
- ▶ create programs in three different languages that use loop statements such as for and while statements.

Programming for the Internet prepares students for entry-level positions developing and maintaining Internet and Intranet web pages. The courses prepare students to create, modify, and program web pages, such as used in electronic commerce. Students will gain knowledge in both technical and artistic sides of this profession.

Career Opportunities: web page developer, web programmer, technical support, webmaster

Scientific Programming

A.S. Degree

CSIS 46	C++ Programming II	4 units
MATH 1A	Single-Variable Calculus and Analytic Geometry	4 units

Choose one:

CSIS 5	C++ Scientific Programming (3 units)	
CSIS 45	C++ Programming I (4 units)	
		3-4 units

Choose two:

CSIS 24	Java Programming I (4 units)	
CSIS 47	Visual C++ Programming (4 units)	
CSIS 51	Visual Basic .NET Programming (4 units)	
CSIS 54/54L	Perl Programming (4 units)	
		8 units

Choose two:

MATH 1B	Single-Variable Calculus and Analytic Geometry (4 units)	
MATH 5	Introduction to Statistics (3 units)	
MATH 7	Finite Mathematics (3 units)	
CSIS/MATH 26	Discrete Math (4 units)	
		6-8 units

Total Units for Major: 25-28 UNITS

Plus completion of general education requirements units vary

Total Units Required for A.S.: minimum of 60 UNITS

Certificate of Achievement

CSIS 46	C++ Programming II	4 units
MATH 1A	Single-Variable Calculus and Analytic Geometry	4 units

Choose one:

CSIS 5	C++ Scientific Programming (3 units)	
CSIS 45	C++ Programming I (4 units)	
		3-4 units

Choose two:

CSIS 24	Java Programming I (4 units)	
CSIS 47	Visual C++ Programming (4 units)	
CSIS 51	Visual Basic .NET Programming (4 units)	
CSIS 54/54L	Perl Programming (4 units)	
		8 units

Choose two:

MATH 1B	Single-Variable Calculus and Analytic Geometry (4 units)	
MATH 5	Introduction to Statistics (3 units)	
MATH 7	Finite Mathematics (3 units)	
CSIS/MATH 26	Discrete Math (4 units)	
		6-8 units

Total Units for Certificate of Achievement: 25-28 UNITS

Program Learning Outcomes: After completing this degree a student will be able to:

- ▶ create programs in three different languages that use control flow statements such as if and switch statements.
- ▶ create scientific programs in three different languages that use loop statements such as for and while statements.

Scientific Programming prepares students for entry-level scientific programming in a wide variety of occupations. Many of the courses in this degree will be needed for students transferring to a university to study Computer Science. Students planning to transfer need to research lower division major requirements at the transfer destination of their choice.

Career Opportunities: scientific programming, computer programming, statistical programming, research.

Program Learning Outcomes: After completing this Certificate of Achievement a student will be able to:

- ▶ create programs in three different languages that use control flow statements such as if and switch statements.
- ▶ create scientific programs in three different languages that use loop statements such as for and while statements.

Scientific Programming prepares students for entry-level scientific programming in a wide variety of occupations.

Career Opportunities: scientific programming, computer programming, statistical programming, research

To receive an Associate of Science degree students must also complete Gavilan general education requirements.

Telecommunications/Network Cabling *Certificate of Proficiency*

This is a comprehensive course that introduces network cabling through a short term and hands-on program. Students will become skilled in installing, terminating, testing and troubleshooting both copper and fiber-optic based cabling systems. Classes are geared to people with no technical experience.

Upon satisfactory completion of this class the student will receive a Network Cabling Specialist Certification for both copper-based and fiber-optic based cabling issued by C-Tech, Inc. and the student's name will be made available to prospective employers on the C-Tech website.

Prerequisites: none

Hours: 4 hours per week for one semester

CSIS 274 Telecommunication and Network Cabling2 units

UNIX Operating System

A.S. Degree

Choose one:

CSIS 18/18L	UNIX/C++ Programming (4 units)	
CSIS 45	C++ Programming I (4 units)	
CSIS 5	C++ Scientific Programming (3 units)	
		. . . . .4 units

CSIS 48	UNIX/Linux Operating System . . . . .	.4 units
CSIS 49	UNIX/Linux Shell Programming . . . . .	.4 units
CSIS 52	Linux/UNIX System Administration . . . . .	.4 units

Choose two:

CSIS 24	Java Programming I (4 units)	
CSIS 54/54L	Perl Programming (4 units)	
CSIS 175A	Networking Essentials (4 units)	
CSIS 46	C++ Programming II (4 units)	
		. . . . .8 units

Total Units for Major: 24 UNITS

Plus completion of general education requirements units vary
Total Units Required for A.S.: minimum of 60 UNITS

General Education Requirements: A student may complete the Gavilan College AA/AS general education, the CSU-GE Breadth, or the IGETC pattern. See a counselor for details.

Program Learning Outcomes: After completing this degree a student will be able to:

- ▶ use UNIX editors to create and modify files.
- ▶ modify, move, and rename files and directories. They will be able to use UNIX email and ftp commands.

If you are using the Web, you are using UNIX, since most large Web servers are UNIX systems. The UNIX Operating System Option prepares students for entry-level positions working with UNIX/Linux operating systems. Many of the courses in this degree will be needed for students transferring to a 4-year college to study Computer Science. Students planning to transfer need to research lower division major requirements at the transfer destination of their choice.

Career Opportunities: UNIX/Linux system administration, webmaster, C/C++ programming

UNIX Operating System

Certificate of Achievement

Choose one:

CSIS 18/18L	UNIX/C++ Programming (4 units)	
CSIS 45	C++ Programming I (4 units)	
CSIS 5	C++ Scientific Programming (3 units)	
	.....	.4 units

CSIS 48	UNIX/Linux Operating System	.....	.4 units
CSIS 49	UNIX/Linux Shell Programming	.....	.4 units
CSIS 52	Linux/UNIX System Administration	.....	.4 units

Choose two:

CSIS 24	Java Programming I (4 units)	
CSIS 54/54L	Perl Programming (4 units)	
CSIS 175A	Networking Essentials (4 units)	
CSIS 46	C++ Programming II (4 units)	
	.....	.8 units

Total Units for Certificate of Achievement: 24 UNITS

Program Learning Outcomes: After completing this Certificate of Achievement a student will be able to:

- ▶ use UNIX editors to create and modify files.
- ▶ modify, move, and rename files and directories. They will be able to use UNIX e-mail and ftp commands.

If you are using the Web, you are using UNIX, since most large Web servers are UNIX systems. The UNIX Operating System Option prepares students for entry-level positions working with UNIX/Linux operating systems. Many of the courses in this degree will be needed for students transferring to a 4-year college to study Computer Science.

Career Opportunities: UNIX/Linux system administration, webmaster, C/C++ programming

To receive an Associate of Science degree students must also complete Gavilan general education requirements.

Web Page Production Specialist *Certificate of Proficiency*

CSIS 6	Web Page Authoring I	.....	.2 units
CSIS 77	Introduction to Digital Media & Its Tools	.....	.3 units
CSIS 126	Word Processing - MS Word	.....	.2 units

Choose one:

CSIS 114	Digital Media Production (2 units)	
JOUR 18A	Working on the Newspaper (2 units)	
	.....	.2 units

Choose one:

CSIS 7	Web Page Authoring II (2 units)	
CSIS 85	Web Design I: Dreamweaver (2 units)	
	.....	.2 units

Choose one:

CSIS 110	Interactive Animation: Flash (3 units)	
CSIS 109	Interactive Animation and Authoring: Director (3 units)	
	.....	.3 units

Choose one:

CSIS 75	Photoshop I - Adobe Photoshop (3 units)	
JOUR 16A	Writing for Media (3 units)	
	.....	.3 units

Total Units for Certificate of Proficiency: 17 UNITS

This certificate prepares the student for entry-level work laying out and adding content to web pages for the Internet. Students may concentrate on visual or text content. This certificate can lead to advanced certificates or degrees in Web Page Design, Digital Media or Media Arts.