

## CS/IS135 : Programming In C/C++

### General Information

Author:	<ul style="list-style-type: none"><li>Tony Biehl</li></ul>
Attachments:	DE Addendum_CS:IS_135(CE_COR_8:1:20_CoDE_2:27:24.pdf DE Addendum_CS:IS_135 COR_09_01_2020 CoDE_09_26_2023.pdf.pdf
Course Code (CB01) :	CS/IS135
Course Title (CB02) :	Programming In C/C++
Department:	CSIS
Proposal Start:	Spring 2026
TOP Code (CB03) :	(0707.10) Computer Programming
CIP Code:	(11.0201) Computer Programming/Programmer, General.
SAM Code (CB09) :	C - Clearly Occupational
Distance Education Approved:	No
Will this course be taught asynchronously?:	Yes
Course Control Number (CB00) :	CCC000188864
Curriculum Committee Approval Date:	05/28/2025
Board of Trustees Approval Date:	06/18/2024
Last Cyclical Review Date:	03/27/2024
Course Description and Course Note:	CS/IS 135 is a course in programming using the C/C ++ languages, with uses in applications programming for real time, business, and image processing systems as well as systems programming. Types, operators, control flow functions, object-oriented programming, classes, data abstraction, and program structure pointers and arrays are covered in the programming assignments.
Justification:	Coding/Category Change Transferability/C-ID Change
Academic Career:	<ul style="list-style-type: none"><li>Credit</li></ul>
Mode of Delivery:	No value
Author:	No value
Course Family:	No value

### Academic Senate Discipline

Primary Discipline:	<ul style="list-style-type: none"><li>Computer Science</li></ul>
Alternate Discipline:	<ul style="list-style-type: none"><li>Computer Information Systems (Computer network installation, microcomputer technology, computer applications)</li></ul>
Alternate Discipline:	No value

## Course Development

### Basic Skill Status (CB08)

Course is not a basic skills course.

Allow Students to Gain Credit by Exam/Challenge

### Course Special Class Status (CB13)

Course is not a special class.

### Pre-Collegiate Level (CB21)

Not applicable.

### Grading Basis

- Grade with Pass / No-Pass Option

### Course Support Course Status (CB26)

Course is not a support course

## General Education and C-ID

### General Education Status (CB25)

Not Applicable

### Transferability

Transferable to both UC and CSU

### Transferability Status

Approved

### GCC General Education Requirements

Area 2: Mathematical Concepts and Quantitative Reasoning

### Area

Mathematical Concepts and Quantitative Reasoning

### Status

Approved

### Approval Date

09/02/2025

### Comparable Course

No Comparable Course defined.

### C-ID

COMP

### Area

Computer Science

### Status

Approved

### Approval Date

02/17/2015

### Comparable Course

COMP 122 - Programming Concepts and Methodology I

## Units and Hours

### Summary

<b>Minimum Credit Units (CB07)</b>	3
<b>Maximum Credit Units (CB06)</b>	3
<b>Total Course In-Class (Contact) Hours</b>	90
<b>Total Course Out-of-Class Hours</b>	72
<b>Total Student Learning Hours</b>	162

### Credit / Non-Credit Options

**Course Type (CB04)**

Credit - Degree Applicable

**Noncredit Course Category (CB22)**

Credit Course.

**Noncredit Special Characteristics**

No Value

**Course Classification Code (CB11)**

Credit Course.

 Variable Credit Course**Funding Agency Category (CB23)**

Not Applicable.

 Cooperative Work Experience Education Status (CB10)
**Weekly Student Hours**

	In Class	Out of Class
Lecture Hours	2	4
Laboratory Hours	3	0
Studio Hours	0	0

**Course Student Hours****Course Duration (Weeks)** 18**Hours per unit divisor** 54**Course In-Class (Contact) Hours**

Lecture 36

Laboratory 54

Studio 0

**Total** 90**Course Out-of-Class Hours**

Lecture 72

Laboratory 0

Studio 0

**Total** 72**Time Commitment Notes for Students**

No value

**Units and Hours - Weekly Specialty Hours**

Activity Name	Type	In Class	Out of Class
No Value	No Value	No Value	No Value

**Prerequisites, Corequisites, Recommended Corequisites, and Recommended Preparation****Advisory**

CS/IS112 - Introduction To Programming Using Java

**Objectives**

- Examine problems, apply logic, and provide solutions/algorithms for the problems.
- Show the solution/algorithm using flowcharts or pseudocode.

## Entry Standards

Entry Standards	Description
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Demonstrate understanding of using a computer for programming.	No Value
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## Course Limitations

Cross Listed or Equivalent Course	Description
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No value	No value
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## Requisite Validation

**Upload Statistical Validation and/or other documents (if necessary)**

No Value

## Specifications

### Methods of Instruction

Methods of Instruction	Lecture
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Methods of Instruction	Laboratory
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Methods of Instruction	Demonstrations
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### Out of Class Assignments

- Programming assignments (e.g. design/develop an object-oriented program)
- Computer assignments (e.g. hands-on exploration of GUI programming fundamentals)

### Methods of Evaluation

### Rationale

Exam/Quiz/Test

Final examination

Exam/Quiz/Test

Quizzes

**Textbook Rationale**

No textbook that meets the class's needs is available now.

**Textbooks**

Author	Title	Publisher	Date	ISBN
Gaddis	Starting Out with C++: From Control Structures through Objects	Pearson	2018	978-0134498379

**Other Instructional Materials (i.e. OER, handouts)**

No Value

**Learning Outcomes****Course Objectives**

Examine problems, apply logic, and provide solutions/algorithms for the problems.

Recognize programming problems on a function-by-function basis and develop structured/procedural code based on this approach.

Demonstrate an understanding of object-oriented programming concepts and object-oriented design in creating a program.

Program in the C++ language including use of objects, pointers, and structures.

**SLOs**

**Implement object-oriented programming concepts and object-oriented design.**

Expected Outcome Performance: 70.0

*CSIS*  
Computer Programmer -  
Certificate

Analyze a programming task/problem; based on that analysis, design and implement an object oriented program using multiple classes in a high level language.

*ILOs*  
Core ILOs

Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.

Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.

CS/S Information Technology Certificate	Demonstrate installing, configuring and maintaining computer and mobile devices, including diagnosing, resolving and documenting common hardware and software.
CS/S Information Technology - A.S. Degree Major	Demonstrate installing, configuring, and maintaining computer and mobile devices, including diagnosing, resolving, and documenting common hardware and software.
CS/S Computer Science - Certificate	Prepare a software project to implement a single scientific, mathematical, business, or technical function.
CS/S Computer Science - A.S. Degree Major	Prepare a software project to implement a single scientific, mathematical, business, or technical function.
CS/S Computer Information Systems	analyze simple business or technical problems relevant to programming, and prepare solutions to them demonstrate an understanding of the operations and processes of a computer relevant to programming. implement a program in either C/C++ or Java, using objects
MATH Mathematics - AS-T	analyze, synthesize and evaluate theorems in Linear Algebra. solve applications in math and science using derivatives, integrals, differential equations and linear algebra.
ILOs General Education	apply techniques of analysis and critical thinking to critique real world and theoretical topics and issues
CS/S Computer Software Technician	demonstrate the ability to independently create, save, modify and print a document using a word processing program and appropriate assistive technology write a computer program using either C/C++, Java, or Visual Basic
CS/S Web Development - Certificate	use industry standard tools and techniques to produce, publish and maintain Web sites and Web content.
CS/S Web Development - A.S. Degree Major	use industry standard tools and techniques to produce, publish and maintain Web sites and Web content.
<b>Demonstrate an ability to design, code, and debug basic object-based programs and procedural programs.</b> Expected Outcome Performance: 70.0	
CS/S Computer Programmer - Certificate	Analyze a programming task/problem; based on that analysis, design and implement an object oriented program using multiple classes in a high level language.
ILOs Core ILOs	Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas. Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.
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CSIS Web Development - A.S. Degree Major	use industry standard tools and techniques to produce, publish and maintain Web sites and Web content.
<b>Utilize objects, pointers, and structures to program in the C++ language.</b>	
Expected Outcome Performance: 70.0	
CSIS Computer Programmer - Certificate	Analyze a programming task/problem; based on that analysis, design and implement an object oriented program using multiple classes in a high level language.
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## Additional SLO Information

**Does this proposal include revisions that might improve student attainment of course learning outcomes?**

No

**Is this proposal submitted in response to learning outcomes assessment data?**

No

**If yes was selected in either of the above questions for learning outcomes, explain and attach evidence of discussions about learning outcomes.**

No Value

**SLO Evidence**

No Value

## Course Content

### Lecture Content

#### Introduction to the C/C++ Language (2 hours)

- Languages before C/C++
- Family of languages
- Procedural vs object-oriented
- Components of the C/C++
- Variables and arithmetic
- Data types
- Operators and expressions

#### Creating a Program (2 hours)

- Required files
- Input/output
- Formatting
- Functions and scope

#### Control Flow Statements (6 hours)

- Branching - IF, IF ELSE
- Loops - WHILE and FOR
- Switch
- Break and continue
- Go to and return

**Functions and Complex Expressions (6 hours)**

- Function arguments, types, and parameters
- Scope rules
- Recursion
- Compound assignments
- Operator precedence

**Arrays (4 hours)**

- Single and multidimensional
- Declaration, reference, store and initialize
- Use of arrays in string processing

**Pointers (3 hours)**

- Pointers and addresses
- Syntax and use of pointer operator
- Pointers and arrays
- Pointers to functions

**Data Structures and Classes (4 hours)****Introduction to Object-Oriented Programming (6 hours)****Input and Output (3 hours)**

- Standard I/O
- Formatted I/O
- File I/O

**Total hours: 36****Laboratory/Studio Content****Labs (54 hours)**

- if
- if-else
- switch
- while
- for
- Methods
- Single Dimensional Arrays
- Multi-dimensional Arrays
- Pointers
- Files
- Object and Classes

**Total hours: 54****Additional Information****Repeatability**

Not Repeatable

**Justification (if repeatable was chosen above)**

No Value

**Is it possible this course will have a material fee?**

No

I have contacted my library liaison (<https://campusguides.glendale.edu/faculty/liaisons>):

No

**What term(s) will this course be offered?**

No Value

**Will any additional resources be needed for this course? (Click all that apply)**

- No

**If additional resources are needed, add a brief description and cost in the box provided.**

No Value