



# CIS - Programming in C/C++ Certificate

This CIS – Programming in C/C++ certificate provides students an advanced level of C/C++ programming skills. It will prepare students in advancing their career or transfer to four-year universities.

**Total Units: 19-23**

## First Year

### Semester 1

**3 Units**

COURSE	UNITS	PRE-REQS^	SEMESTERS OFFERED*
<b>CISP 300</b> <sup>Z</sup> Algorithm Design/Problem Solving	3	Intermediate Algebra	F, S, Su(O)

<sup>Z</sup> At least one section of this course is offered with free textbooks and is labeled as zero textbook costs (ZTC). If it is a GE area class or elective, there may be several ZTC offerings to fulfill the GE requirement. Use the Free Textbook filter to find these courses. Learn more on the [ZTC page of the college website](#).

### Semester 2

**8 Units**

COURSE	UNITS	PRE-REQS^	SEMESTERS OFFERED*
<b>CISP 360</b> Introduction to Structured Programming	4	CISP 300 or MATH 400	F(P), S(P)
<b>4 units from List A</b>	4	See List A	See List A

### Semester 3

**4-8 Units**

COURSE	UNITS	PRE-REQS^	SEMESTERS OFFERED*
<b>CISP 400</b> Object Oriented Programming with C++	4	CISP 360	F(O), S(O)
<b>or 4 units from List A (if not taken in Semester 2)</b>	0-4	See List A	See List A

### Semester 4

**4 Units**

COURSE	UNITS	PRE-REQS^	SEMESTERS OFFERED*
<b>CISP 430</b> Data Structures	4	Intermediating programming in the language of the structures (i.e., CISP 400 or 401)	F(P), S(P)

^You must have passed the prerequisite course(s) with a "C" or better; Corequisite must be taken during the same semester; Advisory means it is recommended but not required to enroll in the course.

## Career

### Options/Outlook:

Database Administrators administer, test, and implement computer databases, applying knowledge of database management systems. Coordinate changes to computer databases. May plan, coordinate, and implement security measures to safeguard computer databases. **Career opportunities require more than two years of college study.**

### A sample of reported job titles:

Data Architect, Database Administration Manager, Database Administrator (DBA), Database Analyst, Database Coordinator, Database Developer, Database Programmer, Information Systems Manager, Management Information Systems Director (MIS Director), System Administrator

### Projected job openings in California (2020-2030):

1,870

### Projected growth in California (2020-2030):

18% growth

### Median Salary in California with

\*(O) = Online available, (P) = Partially online

## List A-a minimum of 4 units from the following:

COURSE	UNITS	PRE-REQS^	SEMESTERS OFFERED*
<b>CISP 370</b> Beginning Visual Basic	4	Advisory: CISC 310 or CISP 300	F(O), S(P)
<b>CISP 401</b> Object Oriented Programming with Java	4	CISP 360	F(O), S(O)
<b>CISP 405</b> Object Oriented Programming using C# on Visual Studio .NET	4	CISP 400	Su(O)-odd year

## advanced degree (2021):

\$101,970/yr

## Source:

<https://www.onetonline.org/link/summary/15-1141.00>

## About this map:

This program map represents one possible pathway to complete the program. Please see a counselor to create an education plan that is customized to meet your needs. This map is not a guarantee of course availability or financial aid applicability.

## Zero Textbook Costs (ZTC):

The Zero Textbook Costs designation and logo are added to any course that provides free access to all required instructional materials. These are typically shared with students through Canvas. Courses that are designated as ZTC may still require students to purchase supplemental materials such as lab coats, a calculator, art supplies, etc. See full definitions and searching tips on the [Zero Textbook Costs](#) page of the college website.

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