

# Laney College

## Computer Programming With C++

### Overview

College	Laney - Mathematics and Sciences
Originator	Kim Bridges
Award Type	Certificate of Achievement

### Codes and Dates

State Approval Date	1/02/2018
Curriculum Committee Approval Date	5/12/2017
Board of Trustees Date	11/14/2017
Current Effective Date	1/22/2018
Program Control Number	35236
Top Code	0707.10 - Computer Programming/Programmer, General*
CIP Code	11.0201: Computer Programming/Programmer, General.

### Description

The certificate in Computer Programming with C++ prepares students for careers as software developers. The program provides the analytical, methodological, and language skills required within the computer industry, and serves as a partial foundation for continued education at four-year institutions. It provides a "merit badge" certification of a skill set needed in a vital career field. See a counselor for more information.

### Career Opportunities

Computer programming continues to be an excellent career, with openings in all industries. Job titles include: Computer Programmer, Programmer/Analyst, Software Developer, Computer Systems Analyst, Computer Applications Developer, Computer Applications Engineer, Computer Language Coder, Computer Systems Consultant, Software Architect, Software Engineer.

### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

1. Computer Software Development: Demonstrate the ability to apply data requirements, algorithmic principles, and software development practice in the modeling and design of computer-based systems in a way that proves comprehension of the tradeoffs involved in design choices.
2. Programming Skills: Analyze a problem, using algorithms to create computer systems and appropriate problem solving using a programming language.
3. Solve Business Problems with Computers: Interpret and analyze a business information problem and design, code, compile, test and debug a program solution in C++ using proper program syntax balancing efficiency and maintainability, and manage project tasks required for completion of a computer system development project.

### Degree Requirements:

Core Requirements	Credit Hours: (13 Required)
CIS 006 or Introduction to Computer Programming	5
CIS 061 Structure and Interpretation of Computer Programs *	5
CIS 025 Object Oriented Programming Using C++	4
CIS 025B C++ Programming Language II	4
<b>Choose at least 3 units from the following.</b>	<b>Credit Hours: (3 - 4 Required)</b>
BUS 001A Financial Accounting *	4
BUS 005 Human Relations in Business *	3
BUS 020 General Accounting *	3
BUS 024 Computerized Accounting Principles *	3
CIS 020 Microcomputer Assembly Language	4
CIS 027 Data Structures and Algorithms	4
CIS 036A Java Programming Language I	4
CIS 036B Java Programming Language II	4
CIS 062 Introduction to Systems Analysis and Design	3
CIS 081 Systems Analysis with UML	3
CIS 098 Database Programming with SQL	4
CIS 099 Database Administration with SQL	4
ECON 002 Principles of Economics (Micro-Economics)	3
MATH 011 Discrete Mathematics **	4
MATH 013 Introduction to Statistics **	4

*Many programming jobs involve financial systems, an introductory accounting or micro-economics course is useful to a programming career so can be used*

**Total: 16.00 - 17.00**

\*: Students planning to transfer to a Computer Science program, especially at UC Berkeley, should choose CIS 61

\*\*: Finance courses mentioned

\*\*\*: Mathematics courses mentioned above