

**PROGRAM APPROVAL APPLICATION**  
**NEW or SUBSTANTIAL CHANGE or LOCALLY APPROVED**  
**(This application may not exceed 3 pages)**

**Fill In Form**

Certificate of Achievement – Computer Science

Proposed Program Title

Long Beach City College

College

Long Beach Community College District

District

Fall 2015

Projected Program Start Date

Brent Gilmore

Voting Member

Director of Academic Services

Title

562-938-4311

Phone Number

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E-mail Address

**Goal(s) of Program (Check all that apply):**

Career Technical Education (CTE)

Transfer

Other

**Type of Program (Check all that apply):**

A.S. Degree

A.A. Degree

Certificate of Achievement:

18+ semester (or 27+ quarter) units

12-18 semester (or 18-27 quarter) units

**Reason for Approval Request: (Check One)**

New Program

Substantial Change

Locally Approved

**Program Information**

Recommended Taxonomy of Program (TOP) Code 070100

Units for Major-Degree [Click here to enter text.](#)

Total Units for Degree [Click here to enter text.](#)

Required Units-Certificate 35

**Written Form**

1. Insert the description of the program as it will appear in the catalog.

The Certificate of Achievement in Computer Science prepares a student for an entry level job in the computer software and hardware related fields by teaching them to apply the foundational skills and theory of Computer Science to a variety of problem domains. This series of courses is designed to place an emphasis on problem solving with a balance of skill acquisition and fundamental theory. Each CS courses meets the California C-ID content standards for Computer Science.

2. Provide a brief rationale for the program.

Software Developers are expected to remain in great demand as business and government continue to adopt new computer technologies. Candidates capable of analyzing new systems, such as wireless Internet, should find the best opportunities.

3. List all courses required for program completion, including core requirements, restricted electives and prerequisites. (Push Enter after each entry to begin a new line)

Courses	Course No.	Course Title	Units
<b>Complete one of the following</b>			
	CS11	Computer Programming C++1 <b>OR</b>	4.0
	CS 21	Java: Computer Science 1	4.0
		<b>Subtotal Units</b>	<b>4.0</b>
<b>Required Major Course work</b>			
	CS22	Data Structures and Algorithms	4.0
	CS51	Introduction to Computer Architecture	4.0
	CS 61	Discrete Structures	4.0
	MATH 60	First Calculus Course	5.0
	MATH 70	Second Calculus Course	5.0
	PHYS 3A	Physics for Sci. and Eng. – Mechanics	5.5
	PHYS 3B	Physics for Sci. & Eng. – E & M	4.5
		<b>Subtotal Units</b>	<b>31</b>
		<b>Total Units</b>	<b>35</b>

4. Summarize the Labor Market Information and employment outlook (including citation of the source of the data) for students exiting the program.

The Computer Science program will prepare students for entry-level employment opportunities in the following occupations: computer programmer (SOC 15-1131), software developer, applications (SOC 15-1132), and software developer, systems software (SOC 15-1133). Regardless of the student seeking employment directly after completing this certificate or waiting until completion of a higher degree, the LMI supports LBCC adding this new program to the region. The following summarizes the aggregate LMI in Los Angeles County for the three above mentioned occupations.

- The 2012-2022 job change is 4,185 jobs (12.2%) with the largest growth being in software developers, applications (2,703 jobs, 18%).
- The median hourly earnings is \$50.17; \$5.17 higher than the national median wage.
- There were 1,398 openings in 2014 and in August 2015 there were 5,224 unique job postings.
- The primary regional program that prepares students for these occupations is computer science (CIP 11.0701).
  - In 2013 there were 1,228 regional completions in Computer Science. Of these, only 27 completions were from community colleges. The majority of the completions were from private and state universities and colleges. The number of completions is less than demand indicating a regional need.

The strong regional growth, high wage, and net demand in Los Angeles County warrant LBCC offering this new certificate in the region.

Note: the LMI for these occupations in Orange County is even stronger with a 10-year projected job growth of 3,233 (17%), 670 annual openings, and 426 related annual completions in computer science.

Data Source: EMSI, 2015 Q2, Employees

5. List similar programs at other colleges in the Los Angeles and Orange County Region which may be adversely impacted. (Push Enter after each entry to begin a new line)

College	Program	Who you Contacted	Outcome of Contact
Cerritos College	Computer Information Systems	Reviewed website	Could not find a Computer Science certificate on their website
Cypress College	Computer Information Systems	Reviewed website	They have a Computer Science department, but could not find a certificate
Fullerton College	Computer Science	Reviewed website	Could not find a Computer Science certificate on their website
Golden West College	Computer Science	Reviewed website	They offer a certificate of achievement in Software Development
El Camino College	Computer Science	Reviewed website	They offer a certificate of achievement in Computer Science
Los Angeles Harbor College	Computer Science	Reviewed website	They have a Computer Science department, but could not find a certificate
Orange Coast College	Computer Science	Reviewed website	Could not find a Computer Science certificate on their website
Irvine Valley College	Computer Science	Reviewed website	They offer a certificate in Computer Information Science
Santa Ana College	Computer Science	Reviewed website	They offer a certificate in Computer Science

6. Include any other information you would like to share.

The Associate's Degree has existed for many years at Long Beach City College and the Certificate of Achievement will add additional opportunities for students to gain employment in the field without any additional impact to existing programs.