COMPUTER SCIENCE

Curriculum Guide for Academic Year 2014-2015

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Students planning to **transfer** to a four-year college or university should refer to the ASSIST web site at www.assist.org and **consult a counselor** before beginning a program of study. Please call (562) 938-4561 (LAC) or (562) 938-3920 (PCC) to schedule a counseling appointment. Students may also wish to visit the Transfer Center on either campus.

Program of study leading to:
Associate in Science (A.S.) Degree

COMPUTER SCIENCE COURSES:		Units	In Progress	Completed Grade
Complete ONE of the following series:				
† CS 11 **AND**	Computer Programming/C++I **AND**	4		
† CS 12	Computer Programming/C++ II	4		
OR	**OR**			
† CS 21A **AND**	Java: Computer Science 1 **AND**	4		
† CS 21B	Java: Computer Science 2	4		
	Subtotal Units	**8**		
Required Major Coursework:				
† CS 22	Data Structures and Algorithms	4		
† CS 51	Introduction to Computer Architecture	4		
† MATH 55	Discrete Mathematics	4		
† MATH 60	First Calculus Course	5		
† MATH 70	Second Calculus Course	5		
† PHYS 3A	Physics for Sci. & Eng. - Mechanics	5.5		
† PHYS 3B	Physics for Sci. & Eng. – E & M	4.5		
	Subtotal Units	**32**		
	TOTAL UNITS	**40**		

For graduation with an **Associate in Science (A.S.) Degree with a major in Computer Science:**

1. **Minimum Unit Requirements: §**Any course that appears on a curriculum guide and the General Education Pattern (Plan A) may fulfill both major and general education requirements (Approved by College Curriculum Committee Spring 2012). For this degree, complete a minimum of 60 units in courses numbered 1-599. Please note that additional elective units may be required to meet this minimum based upon courses selected to fulfill General Education for the Associate Degree.

   Computer Science   40 Units
   General Education **§**   19 Units

2. **Scholarship:** Maintain an **overall grade point average (GPA) of 2.0** ("C" average) based on all accredited college work applied to the degree, no matter where completed. For this **field of concentration, complete each course above** with a **grade of "C" or better**, or "P" if course is graded on a P/NP basis.
3. **Residence for the Degree:** Complete at least 30 units of the required 60 in residence at LBCC, or complete in residence at LBCC at least 20 units within the last 30 units of work applied to the degree.
4. **Residence for the Field of Concentration**: Complete fifty percent (50%) or more of the unit requirements for this field of concentration in residence; this means at **least 20 units** of the required 40 units. Credit earned by exam, where applicable, may be included.

Associate Degree requirements continue on following page.

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AS = 2119; C-ACH = 3119
Departmental Phone: 562-938-4904, Web Site: http://www.lbcc.edu/cos
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Associate Degree requirements continued from previous page.

5. **General Education and Proficiency Requirements:** Complete the required A.A./A.S. General Education and Proficiency requirements*, otherwise known as "Plan A". For Plan A requirements, refer to the general catalog or view it online at http://osca.lbcc.edu .
6. Complete and submit the degree application form to the Admissions and Records office during your final semester of course work. These forms are available in the Admissions and Records office, or online at http://admissions.lbcc.edu/ . Refer to the Schedule of Classes (http://schedule.lbcc.edu) and click the "Important Dates" link to view the actual deadline for each semester.

*The requirements for general education/proficiency and the field of concentration (major) need to be from the same catalog year. This catalog year may be any year between the year of initial enrollment to the present, provided continuous enrollment is maintained throughout. See the catalog for definition of "continuous enrollment".

Program of study leading to:
Certificate of Achievement

REQUIRED COURSES—Complete the 40 units of required courses as listed in the Associate Degree requirements box.

TOTAL UNITS   40

For graduation with a **Computer Networking Certificate of Achievement:**
1. Complete each of the **REQUIRED COURSES** listed above with a **minimum grade of** "**C**".
2. Complete fifty percent (50%) or more of the unit requirements for this field of concentration in residence; this means at **least 20 units** of the required 40 must be **completed at Long Beach City College**. Credit earned by exam, where applicable, may be included.
3. Complete and submit the certificate application form to the Admissions and Records office during your final semester of course work. These forms are available in the Admissions and Records office, or online at http://admissions.lbcc.edu/ . Refer to the Schedule of Classes (http://schedule.lbcc.edu) and click the "Important Dates" link to view the actual deadline for each semester.

Program of study leading to:
Certificates of Accomplishment

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Certificate: Android App Developer 4119

REQUIRED COURSES
Take one sequence of:

		UNITS	In Progress	Completed Grade
CS 21A	Java: Computer Science 1	4		
OR	**OR**	**OR**		
CS 11	Computer Programming: C++1	4		
COSP 38	Database Concepts	4		
COSP 230	Android App Development with Java	3		
	TOTAL UNITS	**11**		

For graduation with a **Certificate of Accomplishment:**
1. Complete the above required courses with a minimum grade of "C", or "P" if course is graded on a P/NP basis.
2. Fifty percent (50%) or more of the required units must be completed in residence at LBCC.
Complete and submit the certificate application form to the Admissions and Records office during your final semester of course work. These forms are available in the Admissions and Records office, or online at http://admissions.lbcc.edu.

Career Opportunities

This **Associate Degree or Certificate of Achievement** is a two-year program leading to the Associate in Science (A.S.) degree. This degree will help students succeed after transferring to a CSU or UC School Computer Science major program. Students wishing a bachelor's degree (transfer program) should meet with a counselor to discuss transferability of courses.

Program Mission and Outcomes

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Our mission is to provide the student in the Computer Science Degree or Certificate Program with the foundation to succeed in the next step in their education path with the recommend Association of Computer Machines (ACM) foundation knowledge in computer science principles of program design and analysis, mathematical maturity, and a good physics foundation.

Outcomes:
- Demonstrate a knowledge of common algorithms, their performance, and what applications to use them for.
- Create computer programs with object oriented design principles, and demonstrate a solid understanding of the practice of programming.
- Articulate the basic structures of a processor and their relation to each other and performance, and demonstrate an understanding of assembly language.

Legend

† This course has a prerequisite. Prerequisite courses must be complete with at least a "C" or "P" grade. Refer to the General Catalog (http://www.lbcc.edu/cat/index.html), the Schedule of Classes (http://schedule.lbcc.edu/), or the online Credit Course Outline (http://wdb-asir.lbcc.edu/coursecurriculum/coursedetails/) for specific prerequisite information.