COMPUTER PROGRAMMING

Curriculum Guide for Academic Year 2013-2014

LONG BEACH CITY COLLEGE

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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. To meet with a counselor call (562)938-4561 for the LAC, or (562)938-3920 for PCC. Students may also wish to visit the Transfer Center on either campus.

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

COMPUTER PROGRAMMING CORE COURSES		UNITS	In Progress	Completed Grade
BCOM 15 **OR**	Business Communications **OR**	3 **OR**		
† BCOM 20	Business Writing	3		
COSA 50	Introduction to IT Concepts & Applications	4		
COSP 7	Business Programming Logic & Design	4		
COSP 38	Database Concepts	4		
COSN 205	UNIX/LINUX Fundamentals	4		
COSW 220	Database Programming w/ PHP & MySQL	3		
	Subtotal Units	**22**		

IN ADDITION, complete ONE of the following tracks:

JAVA TRACK

		UNITS	In Progress	Completed Grade
† CS 21A	Java: Computer Science 1	4		
† CS 21B	Java: Computer Science 2	4		
† CS 22	Data Structures and Algorithms	4		
	Subtotal Units	**12**		
	TOTAL	**34**		

C++ TRACK

		UNITS	In Progress	Completed Grade
† CS 11	Computer Programming/C++ I	4		
† CS 12	Computer Programming/C++ II	4		
† CS 22	Data Structures and Algorithms	4		
	Subtotal Units	**12**		
	TOTAL	**34**		

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

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 Programming: Java Track	34 Units
General Education **§**	19 Units
Computer Programming: C++ Track	34 Units
General Education **§**	19 Units

Associate Degree requirements continue on following page.

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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 17 units** of the required 34 must be **completed at Long Beach City College**. Credit earned by exam, where applicable, may be included.
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 34 units of required courses as listed in the Associate Degree requirements box.

	TOTAL UNITS	34		

For graduation with a **Computer Programming 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 17 units** of the required 34 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

Certificate: Java Web Programmer 4083

REQUIRED COURSES			UNITS	In Progress	Completed Grade
†	CS 21A	Java: Computer Science 1	4		
†	CS 21B	Java: Computer Science 2	4		
	COSP 38	Database Concepts	4		
	COSW 20	Dynamic HTML Web Construction	4		
		TOTAL UNITS	16		

Certificate: Information Security 4106

REQUIRED COURSES		UNITS	In Progress	Completed Grade
COSN 10	Networking Fundamentals	4		
COSS 270	Information Security Fundamentals	1		
COSS 271	Network Security Fundamentals	3		
COSS 272	Forensics Digital Analysis and Validation	4		
COSS 273	Computer Forensics and Analysis	4		
	TOTAL UNITS	16		

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Certificate: Computer Technician A+ 4126

REQUIRED COURSES		UNITS	In Progress	Completed Grade
COSN 3	Operating Systems: Software and Hardware	4		
COSN 5	Computer Technician Hardware Basics	4		
	TOTAL UNITS	**8**		

Certificate: Business Digital Literacy 4130

REQUIRED COURSES		UNITS	In Progress	Completed Grade
COSA 1 **OR**	Computer Information Competency **OR**	1 **OR**		
COSA 30 **OR**	Introduction to Computers **OR**	3 **OR**		
COSA 50	Introduction to IT Concepts & Applications	4		
	TOTAL UNITS	**1-4**		

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** includes general topics in the field of computer programming as well as focused topics related to one commonly used programming language and exposure to at least three programming languages. General topics include the use of an operating system, and the translation of a problem statement into a generic program solution. Programming language-specific topics include syntax, program structuring, language constructs and proper programming methods.

Program Mission and Outcomes

Our mission is to prepare student to enter the work force with the necessary foundation and skills in computer programming. These skill and knowledge include the ability to design code in multiple computer languages, work with database design, use a scripting language in an operating system environment, and have a working knowledge of web development and related programming paradigms.

Outcomes:
Create computer programs with object oriented design principles, and demonstrate a solid understanding of the practice of programming, and the understanding of algorithms.
Create programs in a variety of languages.
Demonstrate an understanding of database design fundamentals in relation of programming.

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.

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