

# **COMPUTER and BUSINESS INFORMATION** SYSTEMS (CBIS) / COMPUTER SCIENCE (CS)

### **Curriculum Guide for Academic Year 2011-2012**

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Legend, p. 10 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 Arts (A.A.) Degree

Track 1: Microcomputer Help-Desk Technician: 1123 This track is intended for students interested in working as a help desk technician or in technical support of the PC systems.

Re	equired CORE cours	ses (listed below in recommended sequence)	UNITS	In Progress	Grade
†	CBIS 6A	Intro to IT Concepts & Applications	4		
	CAOTO 15	Business Communications	3		
	CBIS 41	Networking Fundamentals	3		
†	CBIS 36	Systems Analysis and Design	3		
		Subtotal Units	13		
Pe	oquired MA IOP COL	IPSES (listed below in recommended sequence)	LIMITS	In Progress	Completed

Required MAJOR COURSES (listed below in recommended sequence)			UNITS	Progress	Grade
†	CBIS 207AD	Web Construction I	2		
	CBIS 270	Introduction to Information Security	1		
†	CBIS 3	Operating Systems: Software and Hardware	3.5		
†	CBIS 200	Computer Technician Hardware Basics	3.5		
†	CBIS 260	Help Desk Concepts	1		
		Subtotal Units	11		

Associate Degree requirements continue on the following page: Associate Degree requirements continued from the previous page:

Track 1 continued:

COMPUTER & BUSINESS INFORMATION SYSTEMS/COMPUTER SCIENCE 2011-2012

Track 1 AA = 1123; C-ACH = 3123 Track 2 AA = 1124; C-ACH = 3124

Track 3 AA = 1119; C-ACH = 3119 Track 4 AA = 1125; C-ACH = 3125

Departmental Phone: 562-938-4333, Web site: http://cbis/lbcc.edu, Email: cbis@lbcc.edu

Information on this sheet is subject to change without notice. Any updates to this guide are posted at http://osca.lbcc.edu.

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Rac	<u>ADDITION</u> Juired Work Experience	e—complete at least TWO (2) units from the following:	UNITS	
1	CBIS 71AD	_		
ļ +		Work Experience—Comp Info Sys (60 hours) Work Experience—Comp Info Sys (120 hours)	2	
Ţ	CBIS 72AD		3 4	
†	CBIS 73AD	Work Experience—Comp Info Sys (180 hours)	· ·	
		Subtotal Units	2-4	
IN A	ADDITION complete TH	IREE (3) UNITS from the following courses:	UNITS	
†	CAOTC 39A	Microsoft Word for Windows	3	
†	CBIS 211AD	Web Construction II	2	
	CBIS 211AD	Unix/Linux Fundamentals	3	
†		Customer Service	_	
₹	CAOTO 263		3(3.5)	
†	CBIS 6B	Intermediate Business Applications	3	
†	CBIS 6C	Advanced Business Applications	3	
		Subtotal Units	3	
		TRACK 1 TOTAL UNITS	29(29.5)-	
		;	31(31.5)	
Tra	ck 2: Programmer: 1	<b>124</b> .This track is intended for students interested in be	ecoming a	
Rec	nuired CORF courses (	listed below in recommended sequence)	UNITS	In Completed Progress Grade
	CBIS 6A	·	4	Trogress Grade
†	CAOTO 15	Intro to IT Concepts & Applications Business Communications	3	
			_	
_	CBIS 41	Networking Fundamentals	3	
†	CBIS 36	Systems Analysis and Design	3	
		Subtotal Units	13	
D.E.		050 (1) ( 1) 1		In Completed
		SES (listed below in recommended sequence)	UNITS	Progress Grade
†	CBIS 3	Operating Systems: Software and Hardware	3.5	
†	CBIS 7	Business Programming Logic & Design	3.5	
†	CBIS 7 CBIS 38	Business Programming Logic & Design Database Concepts		
†			3.5 4	
•	CBIS 38	Database Concepts  Subtotal Units	3.5 4 <b>11</b>	
IN A	CBIS 38  ADDITION, complete Of	Database Concepts  Subtotal Units  NE (1) of the following SERIES:	3.5 4 11 UNITS	
•	CBIS 38  ADDITION, complete OI  CBIS 8B AND	Database Concepts  Subtotal Units  NE (1) of the following SERIES:  Visual BASIC Programming AND	3.5 4 11 UNITS 4 AND	
<u>IN </u>	CBIS 38  ADDITION, complete OI  CBIS 8B AND  CBIS 208B	Database Concepts  Subtotal Units  NE (1) of the following SERIES:	3.5 4 11 UNITS	
<u>IN /</u>	CBIS 38  ADDITION, complete OI  CBIS 8B AND  CBIS 208B  OR	Database Concepts  Subtotal Units  NE (1) of the following SERIES:  Visual BASIC Programming AND  Advanced Visual Basic Programming	3.5 4 11 UNITS 4 AND 4	
IN A	CBIS 38  ADDITION, complete Of  CBIS 8B AND  CBIS 208B  OR  CS 11 AND	Database Concepts  Subtotal Units  NE (1) of the following SERIES:  Visual BASIC Programming AND  Advanced Visual Basic Programming  Computer Programming/C++ I AND	3.5 4 11 UNITS 4 AND 4 3.5 AND	
<u>IN /</u>	CBIS 38  ADDITION, complete Of  CBIS 8B AND  CBIS 208B  OR  CS 11 AND  CS 12	Database Concepts  Subtotal Units  NE (1) of the following SERIES:  Visual BASIC Programming AND  Advanced Visual Basic Programming	3.5 4 11 UNITS 4 AND 4	
!N # ††	CBIS 38  ADDITION, complete Of  CBIS 8B AND  CBIS 208B  OR  CS 11 AND  CS 12  OR	Database Concepts  Subtotal Units  NE (1) of the following SERIES:  Visual BASIC Programming AND  Advanced Visual Basic Programming  Computer Programming/C++ I AND  Computer Programming/C++ II	3.5 4 11 UNITS 4 AND 4 3.5 AND 3.5	
!N # ††	CBIS 38  ADDITION, complete Of  CBIS 8B AND  CBIS 208B  OR  CS 11 AND  CS 12  OR  CS 21 AND	Database Concepts  Subtotal Units  NE (1) of the following SERIES:  Visual BASIC Programming AND  Advanced Visual Basic Programming  Computer Programming/C++ I AND  Computer Programming/C++ II  Introduction to Computer Science (java) AND	3.5 4 11 UNITS 4 AND 4 3.5 AND 3.5	
!N # ††	CBIS 38  ADDITION, complete Of CBIS 8B AND CBIS 208B OR CS 11 AND CS 12 OR	Database Concepts  Subtotal Units  NE (1) of the following SERIES:  Visual BASIC Programming AND  Advanced Visual Basic Programming  Computer Programming/C++ I AND  Computer Programming/C++ II	3.5 4 11 UNITS 4 AND 4 3.5 AND 3.5	
!N # †† ††	CBIS 38  ADDITION, complete Of  CBIS 8B AND  CBIS 208B  OR  CS 11 AND  CS 12  OR  CS 21 AND	Database Concepts  Subtotal Units  NE (1) of the following SERIES:  Visual BASIC Programming AND Advanced Visual Basic Programming  Computer Programming/C++ I AND Computer Programming/C++ II  Introduction to Computer Science (java) AND Visual BASIC Programming	3.5 4 11 UNITS 4 AND 4 3.5 AND 3.5 3.5 AND	
!N # ††	CBIS 38  ADDITION, complete Of  CBIS 8B AND  CBIS 208B  OR  CS 11 AND  CS 12  OR  CS 21 AND	Database Concepts  Subtotal Units  NE (1) of the following SERIES:  Visual BASIC Programming AND  Advanced Visual Basic Programming  Computer Programming/C++ I AND  Computer Programming/C++ II  Introduction to Computer Science (java) AND	3.5 4 11 UNITS 4 AND 4 3.5 AND 3.5	
†† ††	CBIS 38  ADDITION, complete Of  CBIS 8B AND  CBIS 208B  OR  CS 11 AND  CS 12  OR  CS 21 AND  CBIS 8B	Database Concepts  Subtotal Units  NE (1) of the following SERIES:  Visual BASIC Programming AND Advanced Visual Basic Programming  Computer Programming/C++ I AND Computer Programming/C++ II  Introduction to Computer Science (java) AND Visual BASIC Programming  Subtotal Units	3.5 4 11 UNITS 4 AND 4 3.5 AND 3.5 3.5 AND 4 7-8	
†† †† ††	CBIS 38  ADDITION, complete Of CBIS 8B AND CBIS 208B OR CS 11 AND CS 12 OR CS 21 AND CBIS 8B	Database Concepts  Subtotal Units  NE (1) of the following SERIES:  Visual BASIC Programming AND Advanced Visual Basic Programming  Computer Programming/C++ I AND Computer Programming/C++ II  Introduction to Computer Science (java) AND Visual BASIC Programming  Subtotal Units	3.5 4 11 UNITS 4 AND 4 3.5 AND 3.5 3.5 AND 4 7-8 UNITS	
†† ††	CBIS 38  ADDITION, complete Of CBIS 8B AND CBIS 208B OR CS 11 AND CS 12 OR CS 21 AND CBIS 8B	Database Concepts  Subtotal Units  NE (1) of the following SERIES:  Visual BASIC Programming AND Advanced Visual Basic Programming  Computer Programming/C++ I AND Computer Programming/C++ II  Introduction to Computer Science (java) AND Visual BASIC Programming  Subtotal Units  NE (1) of the following ELECTIVES: Visual BASIC Programming	3.5 4 11 UNITS 4 AND 4 3.5 AND 3.5 3.5 AND 4 7-8 UNITS 4	
†† †† ††	CBIS 38  ADDITION, complete Of CBIS 8B AND CBIS 208B  OR CS 11 AND CS 12  OR CS 21 AND CBIS 8B  ADDITION, complete Of CBIS 8B  CS 11	Database Concepts  Subtotal Units  NE (1) of the following SERIES:  Visual BASIC Programming AND Advanced Visual Basic Programming  Computer Programming/C++ I AND Computer Programming/C++ II  Introduction to Computer Science (java) AND Visual BASIC Programming  Subtotal Units  NE (1) of the following ELECTIVES:  Visual BASIC Programming Computer Programming/C++ I	3.5 4 11 UNITS 4 AND 4 3.5 AND 3.5 3.5 AND 4 7-8 UNITS 4 3.5	
N	CBIS 38  ADDITION, complete Of CBIS 8B AND CBIS 208B  OR CS 11 AND CS 12  OR CS 21 AND CBIS 8B  ADDITION, complete Of CBIS 8B  CS 11 CS 21	Database Concepts  Subtotal Units  NE (1) of the following SERIES:  Visual BASIC Programming AND Advanced Visual Basic Programming  Computer Programming/C++ I AND Computer Programming/C++ II  Introduction to Computer Science (java) AND Visual BASIC Programming  Subtotal Units  NE (1) of the following ELECTIVES:  Visual BASIC Programming Computer Programming/C++ I Introduction to Computer Science I	3.5 4 11 UNITS 4 AND 4 3.5 AND 3.5 3.5 AND 4 7-8 UNITS 4 3.5 3.5	
†† †† ††	CBIS 38  ADDITION, complete Of CBIS 8B AND CBIS 208B  OR CS 11 AND CS 12  OR CS 21 AND CBIS 8B  ADDITION, complete Of CBIS 8B  CS 11 CBIS 71AD	Database Concepts  Subtotal Units  NE (1) of the following SERIES:  Visual BASIC Programming AND Advanced Visual Basic Programming  Computer Programming/C++ I AND Computer Programming/C++ II  Introduction to Computer Science (java) AND Visual BASIC Programming  Subtotal Units  NE (1) of the following ELECTIVES:  Visual BASIC Programming Computer Programming/C++ I Introduction to Computer Science I Work Experience - Comp Info Sys (60 Hours)	3.5 4 11 UNITS 4 AND 4 3.5 AND 3.5 3.5 AND 4 7-8 UNITS 4 3.5 3.5 3.5 2	
N	CBIS 38  ADDITION, complete Of CBIS 8B AND CBIS 208B  OR CS 11 AND CS 12  OR CS 21 AND CBIS 8B  ADDITION, complete Of CBIS 8B  CS 11 CBIS 71AD CBIS 71AD CBIS 72AD	Database Concepts  Subtotal Units  NE (1) of the following SERIES:  Visual BASIC Programming AND Advanced Visual Basic Programming  Computer Programming/C++ I AND Computer Programming/C++ II  Introduction to Computer Science (java) AND Visual BASIC Programming  Subtotal Units  NE (1) of the following ELECTIVES:  Visual BASIC Programming Computer Programming/C++ I Introduction to Computer Science I Work Experience - Comp Info Sys (60 Hours) Work Experience - Comp Info Sys (120 Hours)	3.5 4 11 UNITS 4 AND 4 3.5 AND 3.5 3.5 AND 4 7-8 UNITS 4 3.5 3.5 3.5 2 3	
!N # † † † † † † † † † † † † † † † † † †	CBIS 38  ADDITION, complete Of CBIS 8B AND CBIS 208B  OR CS 11 AND CS 12  OR CS 21 AND CBIS 8B  ADDITION, complete Of CBIS 8B  CS 11 CS 21 CBIS 71AD CBIS 72AD CBIS 73AD	Database Concepts  Subtotal Units  NE (1) of the following SERIES:  Visual BASIC Programming AND Advanced Visual Basic Programming  Computer Programming/C++ I AND Computer Programming/C++ II  Introduction to Computer Science (java) AND Visual BASIC Programming  Subtotal Units  NE (1) of the following ELECTIVES:  Visual BASIC Programming Computer Programming/C++ I Introduction to Computer Science I Work Experience - Comp Info Sys (60 Hours) Work Experience - Comp Info Sys (120 Hours) Work Experience - Comp Info Sys (180 Hours)	3.5 4 11 UNITS 4 AND 4 3.5 AND 3.5 3.5 AND 4 7-8 UNITS 4 3.5 3.5 2 3 4	
!N # † † † † † † † † † † † † † † † † † †	CBIS 38  ADDITION, complete OP  CBIS 8B AND  CBIS 208B  OR  CS 11 AND  CS 12  OR  CS 21 AND  CBIS 8B  ADDITION, complete OP  CBIS 8B  CS 11  CS 21  CBIS 71AD  CBIS 72AD  CBIS 73AD  CBIS 206C	Database Concepts  Subtotal Units  NE (1) of the following SERIES:  Visual BASIC Programming AND Advanced Visual Basic Programming  Computer Programming/C++ I AND Computer Programming/C++ II  Introduction to Computer Science (java) AND Visual BASIC Programming  Subtotal Units  NE (1) of the following ELECTIVES:  Visual BASIC Programming Computer Programming/C++ I Introduction to Computer Science I Work Experience - Comp Info Sys (60 Hours) Work Experience - Comp Info Sys (120 Hours) Work Experience - Comp Info Sys (180 Hours) Work Experience - Comp Info Sys (180 Hours) World Wide Web Database Programming (SP)	3.5 4 11 UNITS 4 AND 4 3.5 AND 3.5 3.5 AND 4 7-8 UNITS 4 3.5 3.5 2 3 4 2.5	
!N # † † † † † † † † † † † † † † † † † †	CBIS 38  ADDITION, complete OP  CBIS 8B AND  CBIS 208B  OR  CS 11 AND  CS 12  OR  CS 21 AND  CBIS 8B  ADDITION, complete OP  CBIS 8B  CS 11  CS 21  CBIS 71AD  CBIS 72AD  CBIS 73AD  CBIS 206C  CBIS 207E	Database Concepts  Subtotal Units  NE (1) of the following SERIES:  Visual BASIC Programming AND Advanced Visual Basic Programming  Computer Programming/C++ I AND Computer Programming/C++ II  Introduction to Computer Science (java) AND Visual BASIC Programming  Subtotal Units  NE (1) of the following ELECTIVES:  Visual BASIC Programming Computer Programming/C++ I Introduction to Computer Science I Work Experience - Comp Info Sys (60 Hours) Work Experience - Comp Info Sys (120 Hours) Work Experience - Comp Info Sys (180 Hours) World Wide Web Database Programming (SP) Dynamic HTML Web Construction	3.5 4 11 UNITS 4 AND 4 3.5 AND 3.5 3.5 AND 4 7-8 UNITS 4 3.5 3.5 2 3 4 2.5 2.5	
!N # †† † † † † † † † † † † † † † † † † †	CBIS 38  ADDITION, complete OP  CBIS 8B AND  CBIS 208B  OR  CS 11 AND  CS 12  OR  CS 21 AND  CBIS 8B  ADDITION, complete OP  CBIS 8B  CS 11  CS 21  CBIS 71AD  CBIS 72AD  CBIS 73AD  CBIS 206C  CBIS 207E  CBIS 216A	Database Concepts  Subtotal Units  NE (1) of the following SERIES:  Visual BASIC Programming AND Advanced Visual Basic Programming  Computer Programming/C++ I AND Computer Programming/C++ II  Introduction to Computer Science (java) AND Visual BASIC Programming  Subtotal Units  NE (1) of the following ELECTIVES:  Visual BASIC Programming Computer Programming/C++ I Introduction to Computer Science I Work Experience - Comp Info Sys (60 Hours) Work Experience - Comp Info Sys (120 Hours) Work Experience - Comp Info Sys (180 Hours) World Wide Web Database Programming (SP) Dynamic HTML Web Construction Introduction to C# Programming	3.5 4 11 UNITS 4 AND 4 3.5 AND 3.5 3.5 AND 4 7-8 UNITS 4 3.5 3.5 2 3 4 2.5 2.5 3.5	
N	CBIS 38  ADDITION, complete OP  CBIS 8B AND  CBIS 208B  OR  CS 11 AND  CS 12  OR  CS 21 AND  CBIS 8B  ADDITION, complete OP  CBIS 8B  CS 11  CS 21  CBIS 71AD  CBIS 72AD  CBIS 73AD  CBIS 206C  CBIS 207E  CBIS 216A  CBIS 223	Database Concepts  Subtotal Units  NE (1) of the following SERIES:  Visual BASIC Programming AND Advanced Visual Basic Programming  Computer Programming/C++ I AND Computer Programming/C++ II  Introduction to Computer Science (java) AND Visual BASIC Programming  Subtotal Units  NE (1) of the following ELECTIVES:  Visual BASIC Programming Computer Programming/C++ I Introduction to Computer Science I Work Experience - Comp Info Sys (60 Hours) Work Experience - Comp Info Sys (120 Hours) Work Experience - Comp Info Sys (180 Hours) World Wide Web Database Programming (SP) Dynamic HTML Web Construction Introduction to C# Programming Unix/Linux Fundamentals	3.5 4 11 UNITS 4 AND 4 3.5 AND 3.5 3.5 AND 4 7-8 UNITS 4 3.5 3.5 2 3 4 2.5 2.5 3.5 3(3.5)	
!N # †† † † † † † † † † † † † † † † † † †	CBIS 38  ADDITION, complete OP  CBIS 8B AND  CBIS 208B  OR  CS 11 AND  CS 12  OR  CS 21 AND  CBIS 8B  ADDITION, complete OP  CBIS 8B  CS 11  CS 21  CBIS 71AD  CBIS 72AD  CBIS 73AD  CBIS 206C  CBIS 207E  CBIS 216A	Database Concepts  Subtotal Units  NE (1) of the following SERIES:  Visual BASIC Programming AND Advanced Visual Basic Programming  Computer Programming/C++ I AND Computer Programming/C++ II  Introduction to Computer Science (java) AND Visual BASIC Programming  Subtotal Units  NE (1) of the following ELECTIVES:  Visual BASIC Programming Computer Programming/C++ I Introduction to Computer Science I Work Experience - Comp Info Sys (60 Hours) Work Experience - Comp Info Sys (120 Hours) Work Experience - Comp Info Sys (180 Hours) World Wide Web Database Programming (SP) Dynamic HTML Web Construction Introduction to C# Programming	3.5 4 11 UNITS 4 AND 4 3.5 AND 3.5 3.5 AND 4 7-8 UNITS 4 3.5 3.5 2 3 4 2.5 2.5 3.5	

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Track 3: Programmer—Computer Science: 1119. This track is intended for students interested in Computer Science courses that will help them succeed after transferring to a CSU or UC School Computer Science major program. See a counselor to inquire about CSU or UC school-specific computer science transfer requirements. Not all the courses in this track will meet the specific degree requirements for a particular school.  Required CORE courses (listed below in recommended sequence)  To Bis 6A  Intro to IT Concepts & Applications CAOTO 15  Business Communications Business Schomanications Business Applications CAOTO 15  CBIS 36  Systems Analysis and Design Subtotal Units Business Communications Business Communications Business Programming Logic & Design Subtotal Units Business Programming Logic & Design Business Programming Logic & Design CBIS 3  CBIS 30  CBIS	†	CBIS 420	PHP & My SQL for the Web		3.5		
Track 3: Programmer—Computer Science: 1119. This track is intended for students interested in Computer Science courses that will help them succeed after transferring to a CSU or UC School Computer Science major program. See a courselor to inquire about CSU or UC school Sepetific computer science transfer requirements. Not all the courses in this track will meet the specific degree requirements for a particular school.  Required CORE courses (listed below in recommended sequence)  CBIS 6A  Intro to IT Concepts & Applications CBIS 41  CBIS 36  CBIS 41  Networking Fundamentals 3  CBIS 41  CBIS 36  Systems Analysis and Design Subtotal Units  Subtotal Units  REQUIRED MAJOR COURSES (listed below in recommended sequence) T CBIS 3  CBIS 7  CBIS 37  CBIS 37  CBIS 37  CBIS 38  Database Concepts 4  CBIS 223  Unix/Linux Fundamentals Subtotal Units  Subtotal Units  Subtotal Units  14(14.5)  In Completed Program in Computer Programming And Advanced Visual BASIC Programming And Advanced Visual Basic Programming CH I AND CS 12 AND Computer Programming/C+I I AND CS 12 AND Computer Programming/C+I I AND CS 21 AND Introduction to Computer Science I AND Subtotal Units  NADDITION. complete ONE (1) of the following ELECTIVES: UNITS  IN ADDITION. complete ONE (1) of the following ELECTIVES: UNITS  NADDITION. complete ONE (1) of the following ELECTIVES: UNITS  NADDITION. complete ONE (1) of the following ELECTIVES: UNITS  IN ADDITION. complete ONE (1) of the following ELECTIVES: UNITS  IN ADDITION. complete ONE (1) of the following ELECTIVES: UNITS  IN ADDITION. complete ONE (1) of the following ELECTIVES: UNITS  IN ADDITION. complete ONE (1) of the following ELECTIVES: UNITS  IN ADDITION. complete FIVE (5) UNITS from the following: UNITS  UNITS  IN ADDITION. complete FIVE (5) UNITS from the following: UNITS	† +	CBIS 430 CBIS 492	Ruby on Rails Web Development	24	3.5 2.5		
TRACK 2 TOTAL UNITS: 33.5-36  Track 3: Programmer—Computer Science: 1119. This track is intended for students interested in Computer Science courses that will help them succeed after transferring to a CSU or UC School Computer Science major program. See a counselor to inquire about CSU or UC school-specific computer science transfer requirements. Not all the courses in this track will meet the specific degree requirements for a particular school.  Required CORE courses (listed below in recommended sequence)  I CBIS 6A  Intro to IT Concepts & Applications CAITO 15  Business Communications CBIS 41  Networking Fundamentals Systems Analysis and Design Subtotal Units  In  Completed Grade  REQUIRED MAJOR COURSES (listed below in recommended sequence)  I CBIS 3  Operating Systems: Software and Hardware CBIS 3  CBIS 3  CBIS 3  CDETAIN COURSES (listed below in recommended sequence)  I CBIS 3  CDETAIN COURSES (listed below in recommended sequence)  I CBIS 3  Departing Systems: Software and Hardware CBIS 3  CBIS 3  CDETAIN COURSES (listed below in recommended sequence)  I CBIS 38  Database Concepts  I CBIS 39  CDETAIN COURSES (LISTED STAND COURSES)  I CBIS 23  Unix/Linux Fundamentals Subtotal Units  I (LISTED STAND COURSES)  CBIS 208  Advanced Visual Basic Programming AND  CS 12 AND COMPUTER Programming C++ I AND CS 12 AND CS 12 AND COMPUTER Programming C++ I AND CS 12 AND CS 12 AND Introduction to Computer Science II AND CS 22 AND Introduction to Computer Science II AND Subtotal Units  IN ADDITION, complete ONE (1) of the following ELECTIVES:  UNITS  IN ADDITION, complete ONE (1) of the following ELECTIVES:  UNITS  IN ADDITION, complete ONE (1) of the following ELECTIVES: Subtotal Units  IN ADDITION, complete FIVE (5) UNITS from the following:  UNITS  IN ADDITION, complete FIVE (5) UNITS from the following:  UNITS  IN ADDITION, complete FIVE (5) UNITS from the following:  UNITS	'	0510 102	, , ,		п		
Track 3: Programmer—Computer Science: ### Science courses that will help them succeed after transferring to a CSU or UC School Computer Science major program. See a counselor to inquire about CSU or US school-specific computer science transfer requirements. Not all the courses in this track will meet the specific degree requirements for a particular school.  ##################################							
courses that will help them succeed after transferring to a CSU or UC School Computer Science major program. See a courselor to inquire about CSU or UC School-specific computer science transfer requirements. Not all the courses in this track will meet the specific degree requirements for a particular school.    Required CORE courses (listed below in recommended sequence)			TRACK 2 I	OTAL UNITS.	33.3-30		
courses that will help them succeed after transferring to a CSU or UC School Computer Science major program. See a courselor to inquire about CSU or UC School-specific computer science transfer requirements. Not all the courses in this track will meet the specific degree requirements for a particular school.    Required CORE courses (listed below in recommended sequence)							_
to inquire about CSU or UC school-specific computer science transfer requirements. Not all the courses in this track will meet the specific degree requirements for a particular school.  Required CORE courses (listed below in recommended sequence)  † CBIS 6A							
Required CORE courses (listed below in recommended sequence)  † CBIS 6A Intro IT Concepts & Applications (AOTO 15 Business Communications 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3							
Required CORE courses (listed below in recommended sequence)  † CBIS 6A Intro to IT Concepts & Applications CBIS 41 Networking Fundamentals 3 3				equirements. Not	an the cour	363 111 1113 116	ick will frieet trie
CBIS 6A	•		•				
CADTO 15	Req	uired CORE courses (list		<u></u>	UNITS	Progress	Grade
CBIS 41					l l		
CBIS 36   Systems Analysis and Design   Subtotal Units   13					L		
Subtotal Units   13							
Call State	ı	CDIS 30	Systems Analysis and Design	Cubtatal Unita	<u> </u>		
REQUIRED MAJOR COURSES (listed below in recommended sequence)				Subtotal Units	13	<u> </u>	
REQUIRED MAJOR COURSES (listed below in recommended sequence)						In	Completed
CBIS 3	REC	UIRED MAJOR COURSE	S (listed below in recommended sequ	ience)	UNITS		
t CBIS 7 Business Programming Logic & Design 3.5 t CBIS 28 Database Concepts 4					3.5		
CBIS 223	†	CBIS 7			3.5		
N ADDITION, complete ONE (1) of the following SERIES: UNITS	•				· .		
IN ADDITION, complete ONE (1) of the following SERIES:  CBIS 8B AND  Visual BASIC Programming AND  Advanced Visual Basic Programming  OR  CS 11 AND  CS 12 AND  CS 13 C++ Data Structures and Algorithms  OR  TH CS 21 AND  CS 22 AND  Introduction to Computer Science IAND  CS 22 AND  Introduction to Computer Science II AND  Subtotal Units  T - 10.5  IN ADDITION, complete ONE (1) of the following ELECTIVES:  CS 21  CS 21  Introduction to Computer Science  Subtotal Units  T - 10.5  IN ADDITION, complete ONE (1) of the following ELECTIVES:  CS 21  Introduction to Computer Science  3.5  CS 21  CS 21  Introduction to Computer Science  3.5  CS 21  CS 21  Introduction to Computer Science  3.5  CS 21  CS 21  Introduction to Computer Science  3.5  CS 21  CS 21  Introduction to Computer Science  3.5  CS 21  CS 21  Introduction to Computer Science  3.5  CS 21  CS 21  Introduction to Computer Science  3.5  CS 21  CS 21  CS 21  Introduction to Computer Science  3.5  CS 21  CS 2	†	CBIS 223	Unix/Linux Fundamentals			1	
TOBIS 8B AND Visual BASIC Programming AND 4 AND CBIS 208B Advanced Visual Basic Programming 4  OR  THE CS 11 AND Computer Programming/C++ I AND 3.5 AND CS 12 AND COmputer Programming/C++ II AND 3.5 AND CS 13 C++ Data Structures and Algorithms 3.5 AND CS 14 AND Introduction to Computer Science IAND 3.5 AND CS 22 AND Introduction to Computer Science II AND 3.5 AND Introduction to Computer Science II AND 3.5 AND CS 22 AND Introduction to Computer Science II AND 3.5 AND Introduction to Computer Science II AND 3.5 AND Subtotal Units 7 – 10.5  IN ADDITION, complete ONE (1) of the following ELECTIVES:  TOBIS 8B Visual BASIC Programming 4  TOS 21 Introduction to Computer Science 3.5  TOBIS 216A Introduction to Computer Science 3.5  TOBIS 216A Introduction to C# Programming 3.5  TOBIS 420 PHP & My SQL for the Web 3.5  TOBIS 430 Ruby on Rails Web Development 3.5  TOBIS 492 ST Interpretive Programming Languages 2.5  Subtotal Units 2.5 - 4  IN ADDITION, complete FIVE (5) UNITS from the following:				Subtotal Units	14(14.5)		
TOBIS 8B AND Visual BASIC Programming AND 4 AND CBIS 208B Advanced Visual Basic Programming 4  OR  THE CS 11 AND Computer Programming/C++ I AND 3.5 AND CS 12 AND COmputer Programming/C++ II AND 3.5 AND CS 13 C++ Data Structures and Algorithms 3.5 AND CS 14 AND Introduction to Computer Science IAND 3.5 AND CS 22 AND Introduction to Computer Science II AND 3.5 AND Introduction to Computer Science II AND 3.5 AND CS 22 AND Introduction to Computer Science II AND 3.5 AND Introduction to Computer Science II AND 3.5 AND Subtotal Units 7 – 10.5  IN ADDITION, complete ONE (1) of the following ELECTIVES:  TOBIS 8B Visual BASIC Programming 4  TOS 21 Introduction to Computer Science 3.5  TOBIS 216A Introduction to Computer Science 3.5  TOBIS 216A Introduction to C# Programming 3.5  TOBIS 420 PHP & My SQL for the Web 3.5  TOBIS 430 Ruby on Rails Web Development 3.5  TOBIS 492 ST Interpretive Programming Languages 2.5  Subtotal Units 2.5 - 4  IN ADDITION, complete FIVE (5) UNITS from the following:	INI A	DDITION commists ONE	(4) of the following CERIES		LINITO		
The CBIS 208B Advanced Visual Basic Programming 4 OR  CS 12 AND Computer Programming/C++ I AND 3.5 AND CS 12 AND Computer Programming/C++ II AND 3.5 AND CS 13 C++ Data Structures and Algorithms 3.5 OR  CS 21 AND Introduction to Computer Science IAND 3.5 AND CS 22 AND Introduction to Computer Science II AND 3.5 AND Introduction to Computer Science II AND 3.5 AND  Subtotal Units 7 - 10.5  IN ADDITION, complete ONE (1) of the following ELECTIVES: UNITS  CS 21 Computer Programming 4 CS 21 Computer Programming 4 CS 21 Introduction to Computer Science 3.5 CBIS 216A Introduction to Computer Science 3.5 CBIS 216A Introduction to C# Programming 3.5 CBIS 420 PHP & My SQL for the Web 3.5 CBIS 430 Ruby on Rails Web Development 3.5 CBIS 492 ST Interpretive Programming Languages 2.5 Subtotal Units 2.5 - 4  IN ADDITION, complete FIVE (5) UNITS from the following: UNITS							<del>                                     </del>
OR  TOS 11 AND Computer Programming/C++ I AND 3.5 AND CS 12 AND Computer Programming/C++ II AND 3.5 AND CS 13 C++ Data Structures and Algorithms 3.5  OR  TOS 21 AND Introduction to Computer Science IAND 3.5 AND CS 22 AND Introduction to Computer Science II AND 3.5 AND Introduction to Computer Science II AND 3.5 AND CS 22 AND Introduction to Computer Science II AND 3.5 AND Introduction to Computer Science II AND 3.5 AND Subtotal Units 7 - 10.5  IN ADDITION, complete ONE (1) of the following ELECTIVES:  UNITS  TOBIS 8B Visual BASIC Programming 4 CS 11 Computer Programming/C++ I 3.5 CS 21 Introduction to Computer Science 3.5 CS 21 Introduction to Computer Science 3.5 CBIS 216A Introduction to C# Programming 3.5 CBIS 420 PHP & My SQL for the Web 3.5 CBIS 430 Ruby on Rails Web Development 3.5 CBIS 492 ST Interpretive Programming Languages 2.5 Subtotal Units 2.5 - 4  IN ADDITION, complete FIVE (5) UNITS from the following:				na			
CS 12 AND CS 13 C++ Data Structures and Algorithms OR  TH CS 21 AND Introduction to Computer Science IAND CS 22 AND Introduction to Computer Science II AND Subtotal Units T - 10.5  IN ADDITION, complete ONE (1) of the following ELECTIVES: CS 11 CS 21 Introduction to Computer Science CS 11 CS 21 Introduction to Computer Science CS 21 Introduction to Computer Science CS 21 CS 21 Introduction to Computer Science CS 21 C	ı		Advanced visual basic i Tograminii	19	7		
CS 13 C++ Data Structures and Algorithms 3.5 OR  The CS 21 AND Introduction to Computer Science IAND 3.5 AND Introduction to Computer Science II AND 3.5 AND Subtotal Units 7 - 10.5  IN ADDITION, complete ONE (1) of the following ELECTIVES:  CBIS 8B Visual BASIC Programming 4 CS 11 Computer Programming/C++ I 3.5 CS 21 Introduction to Computer Science 3.5 CBIS 216A Introduction to C# Programming 3.5 CBIS 420 PHP & My SQL for the Web 3.5 CBIS 430 Ruby on Rails Web Development 3.5 CBIS 492 ST Interpretive Programming Languages 2.5  Subtotal Units 2.5 - 4  IN ADDITION, complete FIVE (5) UNITS from the following:	†††	CS 11 <b>AND</b>			3.5 <b>AND</b>		
OR  TCS 21 AND Introduction to Computer Science IAND 3.5 AND Introduction to Computer Science II AND 3.5 AND Subtotal Units 7 – 10.5    N ADDITION, complete ONE (1) of the following ELECTIVES:    CBIS 8B							
The CS 21 AND Introduction to Computer Science IAND 3.5 AND Introduction to Computer Science II AND 3.5 AND Introduction to Computer Science II AND 3.5 AND Subtotal Units 7 – 10.5    N ADDITION, complete ONE (1) of the following ELECTIVES:   CBIS 8B			C++ Data Structures and Algorithm	S	3.5		
Subtotal Units 7 – 10.5    N ADDITION, complete ONE (1) of the following ELECTIVES:    CBIS 8B	++	-	Introduction to Computer Science IAI	ND	3 5 <b>AND</b>		
Subtotal Units 7 – 10.5    IN ADDITION, complete ONE (1) of the following ELECTIVES:   CBIS 8B	11						
IN ADDITION, complete ONE (1) of the following ELECTIVES:  † CBIS 8B			•				
† CBIS 8B Visual BASIC Programming 4				Subtotal Units	7 – 10.5		
† CBIS 8B Visual BASIC Programming 4							<u>.</u>
† CBIS 8B Visual BASIC Programming 4	INI A	DDITION complete ONE	(1) of the following ELECTIVES:		LIMITO		
† CS 11 Computer Programming/C++ I 3.5 † CS 21 Introduction to Computer Science 3.5 † CBIS 216A Introduction to C# Programming 3.5 † CBIS 420 PHP & My SQL for the Web 3.5 † CBIS 430 Ruby on Rails Web Development 3.5 † CBIS 492 ST Interpretive Programming Languages 2.5  Subtotal Units 2.5 - 4  IN ADDITION, complete FIVE (5) UNITS from the following:	<u> </u>		<del>-</del>				<del>,                                    </del>
† CS 21 Introduction to Computer Science 3.5 † CBIS 216A Introduction to C# Programming 3.5 † CBIS 420 PHP & My SQL for the Web 3.5 † CBIS 430 Ruby on Rails Web Development 3.5 † CBIS 492 ST Interpretive Programming Languages 2.5  Subtotal Units 2.5 - 4  IN ADDITION, complete FIVE (5) UNITS from the following:	T +						
† CBIS 216A Introduction to C# Programming 3.5 † CBIS 420 PHP & My SQL for the Web 3.5 † CBIS 430 Ruby on Rails Web Development 3.5 † CBIS 492 ST Interpretive Programming Languages 2.5  Subtotal Units 2.5 - 4  IN ADDITION, complete FIVE (5) UNITS from the following:							
† CBIS 420 PHP & My SQL for the Web 3.5 † CBIS 430 Ruby on Rails Web Development 3.5 † CBIS 492 ST Interpretive Programming Languages 2.5  Subtotal Units 2.5 - 4  IN ADDITION, complete FIVE (5) UNITS from the following:							
† CBIS 492 ST Interpretive Programming Languages 2.5 Subtotal Units 2.5 - 4  IN ADDITION, complete FIVE (5) UNITS from the following: UNITS	†						
Subtotal Units 2.5 - 4  IN ADDITION, complete FIVE (5) UNITS from the following:  UNITS							
IN ADDITION, complete FIVE (5) UNITS from the following:  UNITS	Ť	CBIS 492					
UNITS				Subtotal Units	2.5 - 4		
UNITS							
UNITS							
UNITS	<u>IN</u> A	DDITION, complete FIVE	(5) UNITS from the following:				
† MATH 60 First Calculus Course 5					UNITS		
•	†	MATH 60	First Calculus Course		5		
† MATH 70 Second Calculus Course 5							
† MATH 80 Third Calculus Course 5	†	MATH 80	Third Calculus Course		5		

COMPUTER & BUSINESS INFORMATION SYSTEMS/COMPUTER SCIENCE 2011-2012

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†	MATH 55A	Discrete Mathematics I	4		
Ť	MATH 55B	Discrete Mathematics II	3		
Ť	PHYS 3A	Physics in Science and Engineering-Mechanics	5		
Ť	PHYS 3B	Physics in Science and Engineering-E and M	4		
÷	PHYS 3C	Physics in Science and Engineering-Modern Physics	4		
'	1111000	Subtotal Units			
			5		
		TRACK 3 TOTAL UNITS:	41.5-46.5		
Tre	ock 1: Notworking:	1125 This track is intended for students interested in wo	rkina os o l	holp dock to	chnician or in
	chnical support of the		ikiriy as a i	leip desk le	CHILICIAN OF IN
iec	πιπισαι δυρροπ οι πιε	; FC Systems.		In	Completed
Re	onuited CORF course	es (listed below in recommended sequence)	UNITS	Progress	Grade
			Í	11091000	- Oraco
†	CBIS 6A	Intro to IT Concepts & Applications	4		
	CAOTO 15	Business Communications	3		
	CBIS 41	Networking Fundamentals	3		
†	CBIS 36	Systems Analysis and Design	3_		
		Subtotal Units	13		
			<u></u>	·	
				In	Completed
RE	QUIRED COURSES (	(listed below in recommended sequence)	UNITS	Progress	Grade
†	CBIS 3	Operating Systems: Software and Hardware	3.5		
÷	CBIS 200	Computer Technician Hardware Basics	3.5		
÷	CBIS 212	Wireless Communications	1.5		
÷	CBIS 220	i-Net+ Internet Technologies	3		
+	CBIS 223	Unix/Linux Fundamentals	3(3.5)		
+	CBIS 225	Microsoft Windows Client O.S.	2.5		
†	CBIS 226	Microsoft Windows Client C.S.  Microsoft Windows Server O.S.	2.5		
†					
†	CBIS 227	Microsoft Windows Networking	2.5	l I	
		Subtotal Units	22(22.5)		
<u>Re</u>	commended but not		UNITS		
†	CBIS 71AD	Work Experience—Comp Info Sys (60 hours)	2		
†	CBIS 72AD	Work Experience—Comp Info Sys (120 hours)	3		
†	CBIS 73AD	Work Experience—Comp Info Sys (180 hours)	4		
†	CBIS 228	Minner of Minner Directors Commission			
- 1	ODIO 220	Microsoft Windows Directory Services	2.5		
1	CBIS 220 CBIS 270		2.5 1		+
	CBIS 270	Introduction to Information Security			
†	CBIS 270 CBIS 271	Introduction to Information Security Network Security Fundamentals	1		
	CBIS 270 CBIS 271 CISCO 250	Introduction to Information Security Network Security Fundamentals Networking Wiring Installation	1 3 3		
†	CBIS 270 CBIS 271 CISCO 250 CISCO 251	Introduction to Information Security Network Security Fundamentals Networking Wiring Installation Introduction to Networking	1 3 3 3		
	CBIS 270 CBIS 271 CISCO 250 CISCO 251 CISCO 252	Introduction to Information Security Network Security Fundamentals Networking Wiring Installation Introduction to Networking Routing and Access Control	1 3 3 3 3		
† † †	CBIS 270 CBIS 271 CISCO 250 CISCO 251 CISCO 252 CISCO 253	Introduction to Information Security Network Security Fundamentals Networking Wiring Installation Introduction to Networking Routing and Access Control Cisco Networking III, LAN	1 3 3 3 3 3		
†	CBIS 270 CBIS 271 CISCO 250 CISCO 251 CISCO 252	Introduction to Information Security Network Security Fundamentals Networking Wiring Installation Introduction to Networking Routing and Access Control Cisco Networking III, LAN WAN's and Remote Access	1 3 3 3 3 3 3		
† † †	CBIS 270 CBIS 271 CISCO 250 CISCO 251 CISCO 252 CISCO 253	Introduction to Information Security Network Security Fundamentals Networking Wiring Installation Introduction to Networking Routing and Access Control Cisco Networking III, LAN WAN's and Remote Access Subtotal Units	1 3 3 3 3 3 3 3 0		
† † †	CBIS 270 CBIS 271 CISCO 250 CISCO 251 CISCO 252 CISCO 253	Introduction to Information Security Network Security Fundamentals Networking Wiring Installation Introduction to Networking Routing and Access Control Cisco Networking III, LAN WAN's and Remote Access	1 3 3 3 3 3 3 3 0		
† † † †	CBIS 270 CBIS 271 CISCO 250 CISCO 251 CISCO 252 CISCO 253 CISCO 254	Introduction to Information Security Network Security Fundamentals Networking Wiring Installation Introduction to Networking Routing and Access Control Cisco Networking III, LAN WAN's and Remote Access Subtotal Units TRACK 4 TOTAL UNITS	1 3 3 3 3 3 3 3 0		
† † † †	CBIS 270 CBIS 271 CISCO 250 CISCO 251 CISCO 252 CISCO 253 CISCO 254  graduation with an Ass	Introduction to Information Security Network Security Fundamentals Networking Wiring Installation Introduction to Networking Routing and Access Control Cisco Networking III, LAN WAN's and Remote Access  Subtotal Units TRACK 4 TOTAL UNITS sociate in Arts (A.A.) Degree with a major in CBIS/CS:	1 3 3 3 3 3 3 3 0		
† † † †	CBIS 270 CBIS 271 CISCO 250 CISCO 251 CISCO 252 CISCO 253 CISCO 254  graduation with an Ass 1. Units: Complete 2	Introduction to Information Security Network Security Fundamentals Networking Wiring Installation Introduction to Networking Routing and Access Control Cisco Networking III, LAN WAN's and Remote Access  Subtotal Units TRACK 4 TOTAL UNITS  sociate in Arts (A.A.) Degree with a major in CBIS/CS: a minimum of 60 units, distributed as follows:	1 3 3 3 3 3 3 5 0 5 35(35.5)		
† † † †	CBIS 270 CBIS 271 CISCO 250 CISCO 251 CISCO 252 CISCO 253 CISCO 254  graduation with an Ass 1. Units: Complete 2	Introduction to Information Security Network Security Fundamentals Networking Wiring Installation Introduction to Networking Routing and Access Control Cisco Networking III, LAN WAN's and Remote Access  Subtotal Units TRACK 4 TOTAL UNITS sociate in Arts (A.A.) Degree with a major in CBIS/CS:	1 3 3 3 3 3 3 5 0 5 35(35.5)	31(31.5) units	
† † † †	CBIS 270 CBIS 271 CISCO 250 CISCO 251 CISCO 252 CISCO 253 CISCO 254  graduation with an Ass 1. Units: Complete 2	Introduction to Information Security Network Security Fundamentals Networking Wiring Installation Introduction to Networking Routing and Access Control Cisco Networking III, LAN WAN's and Remote Access  Subtotal Units TRACK 4 TOTAL UNITS  sociate in Arts (A.A.) Degree with a major in CBIS/CS: a minimum of 60 units, distributed as follows:	1 3 3 3 3 3 3 5 0 5 35(35.5)	31(31.5) units	
† † † †	CBIS 270 CBIS 271 CISCO 250 CISCO 251 CISCO 252 CISCO 253 CISCO 254  graduation with an Ass 1. Units: Complete 2	Introduction to Information Security Network Security Fundamentals Networking Wiring Installation Introduction to Networking Routing and Access Control Cisco Networking III, LAN WAN's and Remote Access  Subtotal Units TRACK 4 TOTAL UNITS  sociate in Arts (A.A.) Degree with a major in CBIS/CS: a minimum of 60 units, distributed as follows: computer Help-Desk Technician Major: General Education/A.A.	1 3 3 3 3 3 3 3 5 0 3 35(35.5)	31(31.5) units	
† † † †	CBIS 270 CBIS 271 CISCO 250 CISCO 251 CISCO 252 CISCO 253 CISCO 254  graduation with an Ass 1. Units: Complete 2	Introduction to Information Security Network Security Fundamentals Networking Wiring Installation Introduction to Networking Routing and Access Control Cisco Networking III, LAN WAN's and Remote Access  Subtotal Units TRACK 4 TOTAL UNITS  sociate in Arts (A.A.) Degree with a major in CBIS/CS: a minimum of 60 units, distributed as follows: computer Help-Desk Technician Major:  General Education/A.A.  Electives/Other courses:	1 3 3 3 3 3 3 3 5 0 3 35(35.5) 29(29.5)-3 25 units 4-6 units	31(31.5) units	
† † † †	CBIS 270 CBIS 271 CISCO 250 CISCO 251 CISCO 252 CISCO 253 CISCO 254  graduation with an Ass 1. Units: Complete 2	Introduction to Information Security Network Security Fundamentals Networking Wiring Installation Introduction to Networking Routing and Access Control Cisco Networking III, LAN WAN's and Remote Access  Subtotal Units TRACK 4 TOTAL UNITS  sociate in Arts (A.A.) Degree with a major in CBIS/CS: a minimum of 60 units, distributed as follows: computer Help-Desk Technician Major: General Education/A.A.	1 3 3 3 3 3 3 3 5 0 3 35(35.5)	31(31.5) units	
† † † †	CBIS 270 CBIS 271 CISCO 250 CISCO 251 CISCO 252 CISCO 253 CISCO 254  graduation with an Ass 1. Units: Complete 2	Introduction to Information Security Network Security Fundamentals Networking Wiring Installation Introduction to Networking Routing and Access Control Cisco Networking III, LAN WAN's and Remote Access  Subtotal Units TRACK 4 TOTAL UNITS  sociate in Arts (A.A.) Degree with a major in CBIS/CS: a minimum of 60 units, distributed as follows: computer Help-Desk Technician Major:  General Education/A.A.  Electives/Other courses: TOTAL:	1 3 3 3 3 3 3 3 5 0 3 35(35.5) 29(29.5)-3 25 units 4-6 units		
† † † †	CBIS 270 CBIS 271 CISCO 250 CISCO 251 CISCO 252 CISCO 253 CISCO 254  graduation with an Ass 1. Units: Complete a	Introduction to Information Security Network Security Fundamentals Networking Wiring Installation Introduction to Networking Routing and Access Control Cisco Networking III, LAN WAN's and Remote Access  Subtotal Units TRACK 4 TOTAL UNITS  sociate in Arts (A.A.) Degree with a major in CBIS/CS: a minimum of 60 units, distributed as follows: computer Help-Desk Technician Major:  General Education/A.A.  Electives/Other courses: TOTAL:	1 3 3 3 3 3 3 3 3 5 0 5 35(35.5)  29(29.5)-3 25 units 4-6 units 60 units		

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nits

- 1. **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.
- 2. **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.
- 3. **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:

For Track 1, complete at least 15-16 units of the required 29(29.5) – 31(31.5) at Long Beach City College. For Track 2, complete at least 17-18 units of the required 33.5-36 at Long Beach City College. For Track 3, complete at least 21- 24 units of the required 41.5 - 46.5 at Long Beach City College. For Track 4, complete at least 18 units of the required 35 at Long Beach City College.

Credit earned by exam, where applicable, may be included.

- 4. **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.
- 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 <a href="http://admissions.lbcc.edu/">http://admissions.lbcc.edu/</a>. Refer to the Schedule of Classes (<a href="http://schedule.lbcc.edu">http://schedule.lbcc.edu</a>) 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".

Unless otherwise noted, "double-counting" is not allowed. That is, one course may not be used to fulfill both a field of concentration requirement and to fulfill a general education requirement.

Program of study leading to:						
Certificate of Achievement						
REQUIRED COURSES—Complete the required courses for the specific Track as listed in the Associate Degree requirements box on the preceding pages.						
Track 1 REQUIRED COURSES		In Progress	Completed			
TOTAL UNITS TRACK 1	29(29.5) – 31(31.5)					
Track 2 REQUIRED COURSES		In Progress	Completed			

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COMPUTER & BUSINESS INFORMATION SYSTEMS/COMPUTER SCIENCE 2011-2012

Track 3 AA = 1119; C-ACH = 3119 Track 4 AA = 1125; C-ACH = 3125

Departmental Phone: 562-938-4333, Web site: http://cbis/lbcc.edu, Email: cbis@lbcc.edu

Information on this sheet is subject to change without notice. Any updates to this guide are posted at <a href="http://osca.lbcc.edu">http://osca.lbcc.edu</a>.

	TOTAL UNITS TRACK 2	33.5 - 36		
Track 3 REQUIRED COURSES			In Progress	Completed
	<b>TOTAL UNITS TRACK 3</b>	41.5 - 46.5		
Track 4 REQUIRED COURSES			In Progress	Completed
	TOTAL UNITS TRACK 4	35(35.5)		

For graduation with a CBIS/CS 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. Credit earned by exam, where applicable, may be included.

For Track 1, complete at least 15-16 units of the required 29(29.5) – 31(31.5) at Long Beach City College. For Track 2, complete at least 17-18 units of the required 33.5-36 at Long Beach City College. For Track 3, complete at least 21- 24 units of the required 41.5 - 46.5 at Long Beach City College. For Track 4, complete at least 18 units of the required 35(35.5) at Long Beach City College.

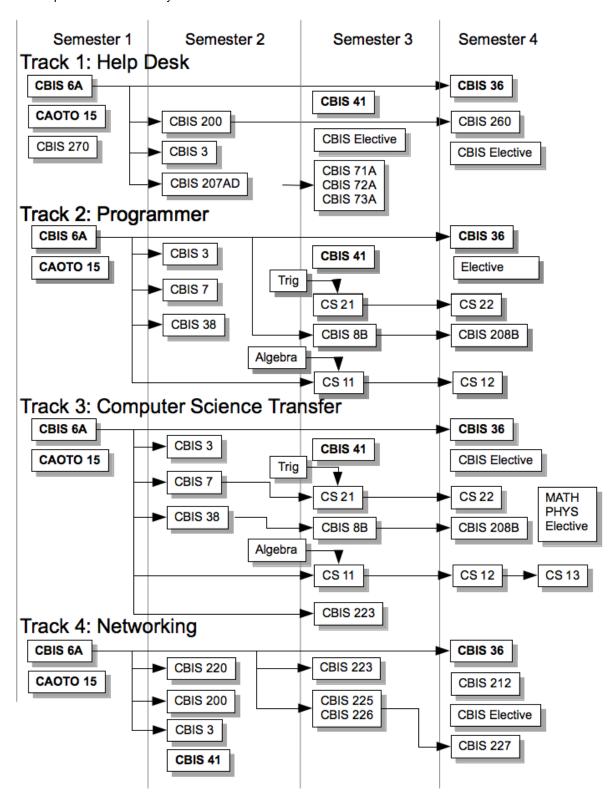
Complete and submit the certificate application form to the Admissions and Records office during your final semester of
course work. These forms are available in the Admissions and Records office, or online at <a href="http://admissions.lbcc.edu/">http://admissions.lbcc.edu/</a>.
Refer to the Schedule of Classes (<a href="http://schedule.lbcc.edu">http://schedule.lbcc.edu</a>) and click the "Important Dates" link to view the actual deadline
for each semester.

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# **Suggested Sequence of Classes**

This is not an educational plan, as course offerings, student schedules, and circumstances vary. Students should follow the requisite skills sequence as indicated by arrows



# Program of study leading to: Certificates of Accomplishment

Certificate: Computer Tech A+ Preparation 4126

<u>RE</u>	QUIRED COURSES		UNITS	In Progress	Completed Grade
†	CBIS 6A	Intro to IT Concepts & Applications	4		
†	CBIS 3	Operating Systems: Software and Hardware	3.5		
†	CBIS 200	Computer Technician Hardware Basics	3.5		
†	CBIS 71AD, 72AD, or 73AD	Work Experience	2-4		
	70/10	TOTAL UNITS	13-15		

For the above certificate only, a grade of "C" or better is required in each course, and cumulative GPA of at least 3.0 must be maintained. All courses must be completed within 5 years.

Certificate: Application Developer 4087

RE	QUIRED COURSES		UNITS	In Progress	Completed Grade
†	CBIS 6A	Intro to IT Concepts & Applications	4		
†	CBIS 7	Business Programming Logic & Design	3.5		
†	CBIS 6B	Intermediate Business Applications	3		
†	CBIS 6C	Advanced Business Applications	3		
†	CBIS 8B	Visual Basic Programming	4		
†	CBIS 71AD	Work Experience	2		
		TOTA	AL UNITS 19.5		

This one is under review by R. Powell as of Sept. 2010 due to units being over the max (must be under 18).

Certificate: Information Security 4106

RE	QUIRED COURSES			UNITS	In Progress	Grade Grade
	CBIS 41	Networking Fundamentals		3		
†	CBIS 220	i-Net+ Internet Technologies		3		
†	CBIS 270	Introduction to Information Security		1		
†	CBIS 271	Network Security Fundamentals		3		
			TOTAL UNITS	10		

RECOMMENDED, but not required courses			UNITS	
	CBIS 223	Unix/Linux Fundamentals	3(3.5)	
	CBIS 225	MS Windows Client OS	2.5	
†	CBIS 226	MS Windows Server OS	2.5	
†	CBIS 227	MS Windows Networking	2.5	
†	CBIS 235A	Linux Server Administration	3.5	
†	CBIS 235B	Linux Networking & Security	3.5	

Certificates of Accomplishment continue on the following page: Certificates of Accomplishment continued from the previous page:

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REQUIRED COURSES	UNITS	In Progress	Completed Grade	
CBIS 7	Business Programming Logic & Design	3.5		
- CS 21	Introduction to Computer Science I (java)	3.5		
CBIS 38	Database Concepts	4		
- CBIS 220	i-Net+ Internet Technologies	3		
- CBIS 207E	Dynamic HTML Web Construction	2.5		
	TOTAL UNITS	16.5		
ertificate: Microsoft	Windows Systems Administration 4107			-
REQUIRED COURSES		UNITS	In Progress	Completed Grade
CBIS 225	Microsoft Windows Client OS	2.5		
CBIS 226	Microsoft Windows Server OS	2.5		
CBIS 227	Microsoft Windows Networking	2.5		
- CBIS 228	Microsoft Windows Director Services	2.5		
				+
	TOTAL UNITS	10.0		
		10.0		-
ertificate: Web Cons		10.0	<u>I</u>	- Completed
		UNITS	In Progress	Completed Grade
			===	•
EQUIRED COURSES	struction 4108	UNITS	===	•
REQUIRED COURSES  CBIS 207AD	Web Construction I	UNITS 2	===	•
CBIS 207AD CBIS 220 CBIS207E	Web Construction I i-Net+ Internet Technologies Dynamic HTML Web Construction	UNITS 2 3	===	•
CBIS 207AD CBIS 220 CBIS 220 CBIS207E cake one of the following	Web Construction I i-Net+ Internet Technologies Dynamic HTML Web Construction courses: Introduction to ASP.NET	UNITS 2 3	===	•
CBIS 220 CBIS207E ake one of the following CBIS 251 CBIS 420	Web Construction I i-Net+ Internet Technologies Dynamic HTML Web Construction courses: Introduction to ASP.NET PHP & My SQL for the Web	UNITS 2 3 2.5	===	
REQUIRED COURSES  CBIS 207AD CBIS 220 CBIS207E fake one of the following CBIS 251	Web Construction I i-Net+ Internet Technologies Dynamic HTML Web Construction courses: Introduction to ASP.NET PHP & My SQL for the Web Ruby on Rails Web Development	UNITS 2 3 2.5 3.5	===	
CBIS 207AD CBIS 220 CBIS 220 CBIS207E take one of the following CBIS 251 CBIS 420	Web Construction I i-Net+ Internet Technologies Dynamic HTML Web Construction courses: Introduction to ASP.NET PHP & My SQL for the Web	UNITS  2 3 2.5  3.5 3.5	===	

Certificate: Windows Network Administrator 4086

CBIS 6A

CBIS 41

RE	QUIRED COURSES		UNITS	In Progress	Completed Grade
†	CBIS 3	Operating Systems: Software and Hardware	3.5		
†	CBIS 41	Networking Fundamentals	3		
†	CBIS 212	Wireless Communications	1.5		
†	CBIS 225	Microsoft Windows Client OS	2.5		
†	CBIS 226	Microsoft Windows Server OS	2.5		
†	CBIS 227	Microsoft Windows Networking	2.5		
		TOTAL UNITS	15.5		

4

3

Certificates of Accomplishment continue on the following page: Certificates of Accomplishment continued from the previous page:

For graduation with a **Certificate of Accomplishment**:

1. Complete the above required units with a minimum grade point average of 2.0 ("C" average).

Intro to IT Concepts & Applications

Networking Fundamentals

COMPUTER & BUSINESS INFORMATION SYSTEMS/COMPUTER SCIENCE 2011-2012

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Track 1 AA = 1123; C-ACH = 3123 Track 2 AA = 1124; C-ACH = 3124 Track 3 AA = 1119; C-ACH = 3119 Track 4 AA = 1125; C-ACH = 3125

- 2. Fifty percent (50%) or more of the required units must be completed in residence at LBCC.
- 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/.

## **Career Opportunities**

The CBIS Department has four Career Certificate programs and several Completion Certificate programs for students interested in working in the computer industry. Track 1 is intended for those students interested in working as help desk technicians assisting end-users resolve software and hardware problems. Track 2 is intended for students interested in developing computer application software in business and industry as an entry-level computer programmer on PCs, mid-range or larger sized computers. Track 3 is intended for students interested in a solid foundation of programming and software engineering skills for use in Computer Science. Track 4 is intended for students who want to know how networking is going to affect their work life, and want to understand what this technology is all about, or are trying to find out if a network would help their organization. It will also prepare students for MS Windows Certification. The CBIS department offers several Certificates of Accomplishment, many of which are also designed to prepare the student to pass industry certification exams.

The Certificates of Achievement will prepare students for an entry-level position in a variety of business settings:

- Track 1 Microcomputer Help-Desk Technician: PC Support Specialist, Software Support
- Track 2 Programmer Java, C++, Visual BASIC, Oracle, and Desktop Support
- Track 3 Programmer Computer Science
- Track 4 Networking System Administrators or Networking Support

The Associate Degree will prepare students for transfer to the four-year college or university.

### **Program Mission and Outcomes**

The mission of the department is to prepare the students for the first two years of their Information Systems/ Computer Science education. In addition, the department provides professional development and training for individuals employed or seeking entry level positions in the Computer Information Systems and Information Technology job markets.

#### Outcomes:

- 1. Choose the correct application for a given task
- 2. Problem solve common information technology failures

### **Legend**

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

\* CBIS 71, 72, or 73 may be taken during the 2<sup>nd</sup>, 3<sup>rd</sup>, or 4<sup>th</sup> semesters.

**₹ NOTE**: **Effective: Spring 2012** -- Unit level will change for the following courses: ACCTG 1A & 1B 4 units  $\rightarrow$  5 units, ACCTG 230 1 units  $\rightarrow$ 2 units, CBIS 223 3 units  $\rightarrow$  3.5 units, CBIS 260 1 unit  $\rightarrow$ 1.5 units.

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