

Computer Science Assessment Plans Rev. 6/15/2018

Computer Science (BC)	14-15	15-16	16-17	17-18	18-19	19-20
COMPB2 - Introduction to Computer Information Systems						
• The student will create a document in a word processor, spreadsheet, database management program and apply various formatting/function/aggregate features from each product.	X			X		
• The student will analyze the appropriate use of systems and application software and describe the benefits/purpose related to business and other organizations.	X			X		
• The student will identify various computer hardware devices and itemize the purpose of each device as well as how each device works.	X			X		
• The student will demonstrate their skill with Internet based research methods and find relevant information to be used for a paper related to computers and their chosen profession.	X			X		
• Demonstrate an understanding of the development and use of information systems in business.	X			X		
COMPB5 - Introduction to Microsoft Office						
• Upon completion the student will be able to: The students will identify and analyze computer hardware.	X				X	
• Upon completion the student will be able to: The students will analyze problems and create, format, edit, and print word processing, spreadsheet, presentation, and database files.		X		X		X
COMPB10 - Introduction to Programming Methodologies using Python						
• Describe and apply the software development life-cycle to a given problem. 2. Describe the principles of structured programming and be able to describe, design, implement, and test structured programs using currently accepted methodology and control stru	X			X		
COMPB11 - Programming Concepts and Methodology I						
• Understand and know how to use fundamental programming constructs â€¢ Analyze and explain the behavior of simple programs involving the fundamental programming constructs covered by this unit. â€¢ Modify and expand short programs that use standard conditi	X			X		
• Design and implement algorithms to solve problems â€¢ Discuss the importance of algorithms in the problem-solving process. â€¢ Identify the necessary properties of good algorithms. â€¢ Create algorithms for solving simple problems. â€¢ Use pseudocode or	X				X	
• Discuss general programming-language ideas â€¢ Summarize the evolution of programming languages illustrating how this history has led to the paradigms available today. â€¢ Identify at least one distinguishing characteristic for each of the programming pa	X					X
• Understand and use variables and types â€¢ Explain the value of declaration models, especially with respect to programming-in-the-large. â€¢ Identify and describe the properties of a variable such as its associated address, value, scope, persistence, and	X					X
COMPB12 - Programming Concepts and Methodology II						
• Design and implement programs that use arrays, records/structs, strings, linked lists, stacks, queues, hash tables, and trees.						X
• Design, implement, test, and debug recursive functions and procedures.	X			X		
• Evaluate the tradeoffs in lifetime management of data when using manual memory management versus reference counting or tracing garbage collection.	X				X	
• Explain how abstraction mechanisms support the creation of reusable software components.	X					X
• Design, implement, test, and debug programs in an object-oriented language.	X				X	
• Compare and contrast object-oriented analysis and design with structured analysis and design.	X			X		
COMPB13 - Computer Architecture and Organization						
• Describe computer representation of numbers and how computer arithmetic is carried out.					X	
• Demonstrate understanding of the basic organization and operation of a digital computer at a machine language level.						X
• Write and debug simple assembly language programs.				X		
• Demonstrate how fundamental high-level programming constructs are implemented at the machine-language level.					X	

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COMPB14 - Discrete Structures						
• Describe how formal tools of symbolic logic are used to model real-life situations, including those arising in computing contexts such as program correctness, database queries, and algorithms.	X			X		
• Relate the ideas of mathematical induction to recursion and recursively defined structures.	X			X		
• Analyze a problem to create relevant recurrence equations.	X				X	
• Demonstrate different traversal methods for trees and graphs.	X					X
• Apply the binomial theorem to independent events and Bayes's™ theorem to dependent events.	X					X
COMPB21 - Database Systems - Design & Structured Query Language (SQL)						
• The student will be able to design and produce fully normalized databases from real world scenarios. The design will include the use of modern data modeling tools and diagrams.	X		X			
• The student will produce SQL commands that query and manipulate databases using DDL and DML.	X		X			
• The student will choose the appropriate database design principles and create a working end-user database system that automates a traditional manual system. The system will include end-user documentation.	X		X			
COMPB31 - CompTIA Network Security - Security+						
• The students will identify and analyze network security vulnerabilities.	X	X		X	X	
• The students will identify and analyze cryptography.	X	X				X
COMPB32 - CompTIA Linux+						
• Upon completion the student will be able to: The students will identify and analyze shell files, commands, and processes.	X	X		X		X
• Upon completion the student will be able to: The students will identify and analyze software installation methods.	X	X		X		
• Upon completion the student will be able to: The students will identify and analyze network configuration and services.	X	X		X	X	
COMPB33 - CompTIA Networking Technologies - Network+						
• Upon completion the student will be able to: The students will identify and analyze network configurations.	X	X				X
• Upon completion the student will be able to: The students will identify and analyze networking protocols and hardware.	X	X		X		
• Upon completion the student will be able to: The students will identify and analyze different types of network topologies and transmission media.	X	X			X	
COMPB41 - Web Design: Design Tools						
• Create basic web sites and post them to a live web server using web authoring tools.	X				X	
• Effectively use principles of good web design in evaluating and creating well designed web sites.	X				X	
• Enhance the looks and communication of their web pages using images.	X				X	
• Develop effective web communication using principles of interaction design.	X				X	
• Create advanced and complex layouts using tables.	X				X	

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COMPB42 - Web Design: HTML & CSS

• Create basic web-page elements using appropriate structure and coding techniques.	X			X		
• Design a web site that communicates effectively using good design principles and techniques.	X			X		
• Develop well-formed and valid HTML code using common text and HTML editors.	X			X		
• Manage, control and upload files on a web server using FTP software.	X			X		
• Integrate different kinds of media and images into web sites.	X			X		
• Diagnose and correct code errors in pages to ensure well-formed pages across platforms and browsers.	X			X		

COMPB43 - Web Design: JavaScript

• Define, discuss and identify major scripting languages.	X			X	X	
• Develop web page scripts using structured coding techniques.	X				X	
• Create cross-platform scripts using JavaScript.	X				X	
• Develop interactive web pages using advanced coding techniques.	X				X	
• Integrate external frameworks into web sites to enhance their function.	X				X	
• Produce degradable designs using Cascading Style Sheets.	X				X	

COMPB48WE - Occupational Work Experience Education

• Upon completion the student will be able to: Articulate the specific work experience objectives in Computer Science as described by employer and identify the various skills, knowledge and attitudes necessary to the <u>accomplishment of those objectives.</u>				X		
• Upon completion the student will be able to: Demonstrate the acquisition of the various skills, knowledge and attitudes necessary for the completion of the work experience objectives in Computer Science and the ability to <u>effectively meet employer's job expectations.</u>				X		
• Upon completion the student will be able to: Identify and analyze the application of acquired skills, knowledge, and attitudes to <u>career opportunities for Computer Science.</u>				X		

COMPB72 - Applied Software Design

• Upon completion the student will be able to: Examine a possible computer programming scenario, conduct a needs assessment, and plan a solution for <u>said scenario.</u>					X	
• Upon completion the student will be able to: Design and develop the database derived from the needs assessment that conforms to data modeling <u>standards.</u>					X	
• Upon completion the student will be able to: Develop the front-end and back-end computer programs that satisfy the system requirements.					X	
• Upon completion the student will be able to: Produce quality internal and end-user documentation for the developed system.					X	

COMPB84 - COMPTIA A+

• Upon completion the student will be able to: The student will identify and use various methods and tools used to troubleshoot all components (hardware and software) found in <u>most personal computers.</u>				X		
• Upon completion the student will be able to: The student will compare and contrast various operating systems and discuss the <u>advantages/disadvantages of each.</u>				X		
• Upon completion the student will be able to: The student will identify various computer hardware devices and itemize the purpose of each device as well as <u>how each device works.</u>				X		
• Upon completion the student will be able to: The student will explain, and defend, their views on societal and ethical issues involving computers (eg., <u>hacking, right to privacy, intellectual property, copyright, etc.</u>)				X		
• Upon completion the student will be able to: The student will demonstrate their skill with Internet based research methods and find relevant information <u>to be used for locating and using diagnostic tools.</u>				X		

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COMPB94 - Web Design: PHP & MySQL						
• Install and configure PHP on a Web Server.					X	
• Write basic PHP scripts using proper syntax					X	
• Develop more complex PHP scripts using functions, control structures and arrays.					X	
• Set up and configure a MySQL database.					X	
• Read from and write to a MySQL database using PHP.					X	