

Computer Science Assessment Plan Rev. 9/16/2018

Computer Science (BC)	16-17	17-18	18-19	19-20	20-21	21-22
<b>COMPB2 - Introduction to Computer Information Systems</b>						
• The student will create a document in a word processor, spreadsheet, database management program and apply various formatting/function/aggregate features from each product.		C			P	
• The student will analyze the appropriate use of systems and application software and describe the benefits/purpose related to business and other organizations.		C			P	
• The student will identify various computer hardware devices and itemize the purpose of each device as well as how each device works.		C			P	
• 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.		C			P	
• Demonstrate an understanding of the development and use of information systems in business.		C			P	
<b>COMPB5 - Introduction to Microsoft Office</b>						
• Upon completion the student will be able to: The students will identify and analyze computer hardware.			P		P	
• 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.		C		P		P
<b>COMPB10 - Introduction to Programming Methodologies using Python</b>						
• 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		C			P	
<b>COMPB11 - Programming Concepts and Methodology I</b>						
• 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		C			P	
• 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			P		P	
• 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				P	P	
• 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				P	P	
<b>COMPB12 - Programming Concepts and Methodology II</b>						
• Design and implement programs that use arrays, records/structs, strings, linked lists, stacks, queues, hash tables, and trees.				P		
• Design, implement, test, and debug recursive functions and procedures.		C			P	
• Evaluate the tradeoffs in lifetime management of data when using manual memory management versus reference counting or tracing garbage collection.			P		P	
• Explain how abstraction mechanisms support the creation of reusable software components.				P	P	
• Design, implement, test, and debug programs in an object-oriented language.			P		P	
• Compare and contrast object-oriented analysis and design with structured analysis and design.		C			P	
<b>COMPB13 - Computer Architecture and Organization</b>						
• Describe computer representation of numbers and how computer arithmetic is carried out.			P			
• Demonstrate understanding of the basic organization and operation of a digital computer at a machine language level.				P		
• Write and debug simple assembly language programs.		C				
• Demonstrate how fundamental high-level programming constructs are implemented at the machine-language level.			P			

<b>Computer Science (BC)</b>	<b>16-17</b>	<b>17-18</b>	<b>18-19</b>	<b>19-20</b>	<b>20-21</b>	<b>21-22</b>
<b>COMPB14 - Discrete Structures</b>						
• 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.		C			P	
• Relate the ideas of mathematical induction to recursion and recursively defined structures.		C			P	
• Analyze a problem to create relevant recurrence equations.			P		P	
• Demonstrate different traversal methods for trees and graphs.				P	P	
• Apply the binomial theorem to independent events and Bayes's™ theorem to dependent events.				P	P	
<b>COMPB21 - Database Systems - Design &amp; Structured Query Language (SQL)</b>						
• 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.	C				P	
• The student will produce SQL commands that query and manipulate databases using DDL and DML.	C				P	
• 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.	C				P	
<b>COMPB22 - Introduction to Systems Analysis and Design</b>						
• 1. Upon successful completion of this course, the student will be able critically evaluate a real-world business problem and work it through the systems analysis phases.			P			
• 2. Upon successful completion of this course, the student will be able to create client deliverables by using the appropriate computer aided design tools.			P			
• 3. Upon successful completion of this course, the student will be able to identify those skills that will facilitate a professional end-user/stakeholder presentation.			P			
<b>COMPB31 - CompTIA Network Security - Security+</b>						
• The students will identify and analyze network security vulnerabilities.		C	P		P	P
• The students will identify and analyze cryptography.				P	P	P
<b>COMPB32 - CompTIA Linux+</b>						
• Upon completion the student will be able to: The students will identify and analyze shell files, commands, and processes.		C		P	P	P
• Upon completion the student will be able to: The students will identify and analyze software installation methods.		C			P	P
• Upon completion the student will be able to: The students will identify and analyze network configuration and services.		C	P		P	P
<b>COMPB33 - CompTIA Networking Technologies - Network+</b>						
• Upon completion the student will be able to: The students will identify and analyze network configurations.				P	P	P
• Upon completion the student will be able to: The students will identify and analyze networking protocols and hardware.		C			P	P
• Upon completion the student will be able to: The students will identify and analyze different types of network topologies and transmission media.			P		P	P
<b>COMPB34 - CompTIA A+</b>						
• 1. Upon successful completion of the course, the student will The student will identify and use various methods and tools used to troubleshoot all components (hardware and software) found in most personal computers.			P			
• 2. Upon successful completion of the course, the student will The student will compare and contrast various operating systems and discuss the advantages/disadvantages of each			P			
• 3. Upon successful completion of the course, the student will The student will identify various computer hardware devices and itemize the purpose of each device as well as how each device works.			P			
• 4. Upon successful completion of the course, the student will The student will explain, and defend, their views on societal and ethical issues involving computers (eg., hacking, right to privacy, intellectual property, copyright, etc.)			P			
• 5. Upon successful completion of the course, the student will The student will demonstrate their skill with Internet based research methods and find relevant information to be used for locating and using diagnostic tools.			P			

Computer Science Assessment Plan Rev. 9/16/2018

Computer Science (BC)	16-17	17-18	18-19	19-20	20-21	21-22
-----------------------	-------	-------	-------	-------	-------	-------

**COMPB35 - Digital Forensics**

• 1. Upon successful completion of the course, the student will demonstrate the ability to analyze data on a compromised computer disk.			P			
• 2. Upon successful completion of the course, the student will be able to explain concepts and terminology used by Computer Forensics' Specialists.			P			
• 3. Upon successful completion of the course, the student will be able to identify and explain the rules and laws that govern digital evidence and digital evidence handling			P			

**COMPB36 - Introduction to Cybersecurity: Ethical Hacking**

• 1. Upon successful completion of the course, the student will be able to demonstrate the proper use of tools and methods a malicious actor will use to break into a computer or network.			P			
• 2. Upon successful completion of the course, the student will be able to apply defense mechanisms to computers and networks			P			
• 3. Upon successful completion of the course, the student will be able to apply safeguards for the World Wide Web.			P			

**COMPB41 - Web Design: Design Tools**

• Create basic web sites and post them to a live web server using web authoring tools.			P		P	
• Effectively use principles of good web design in evaluating and creating well designed web sites.			P		P	
• Enhance the looks and communication of their web pages using images.			P		P	
• Develop effective web communication using principles of interaction design.			P		P	
• Create advanced and complex layouts using tables.			P		P	

**COMPB42 - Web Design: HTML & CSS**

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

**COMPB43 - Web Design: JavaScript**

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

Computer Science Assessment Plan Rev. 9/16/2018

Computer Science (BC)	16-17	17-18	18-19	19-20	20-21	21-22
<b>COMPB48WE - Occupational Work Experience Education/Internship</b>						
• 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 accomplishment of those objectives.		C				
• 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 effectively meet employer's job expectations.		C				
• Upon completion the student will be able to: Identify and analyze the application of acquired skills, knowledge, and attitudes to career opportunities for Computer Science.		C				
<b>COMPB72 - Applied Software Design</b>						
• Upon completion the student will be able to: Examine a possible computer programming scenario, conduct a needs assessment, and plan a solution for said scenario.			P			
• Upon completion the student will be able to: Design and develop the database derived from the needs assessment that conforms to data modeling standards.			P			
• Upon completion the student will be able to: Develop the front-end and back-end computer programs that satisfy the system requirements.			P			
• Upon completion the student will be able to: Produce quality internal and end-user documentation for the developed system.			P			
<b>COMPB94 - Web Design: PHP &amp; MySQL</b>						
• Install and configure PHP on a Web Server.			P			
• Write basic PHP scripts using proper syntax			P			
• Develop more complex PHP scripts using functions, control structures and arrays.			P			
• Set up and configure a MySQL database.			P			
• Read from and write to a MySQL database using PHP.			P			