

CompuScholar, Inc.

Alignment to Georgia Foundations of Computer Programming Standards

Georgia Course Details:

Course Title:	Foundations of Computer Programming
Primary Career Cluster:	CTAE / Information Technology
Course Code(s):	11.0120
Standards Link:	Foundations of Computer Programming (MS-CS-FCP)

CompuScholar Course Details:

Course Title:	Python Programming
Course ISBN:	978-1-946113-00-9
Course Year:	2019

Note 1: Citation(s) listed may represent a subset of the instances where objectives are met throughout the course.

Note 2: Citation(s) for a "Lesson" refer to the "Lesson Text" elements and associated "Activities" within the course, unless otherwise noted. The "Instructional Video" components are supplements designed to introduce or re-enforce the main lesson concepts, and the Lesson Text contains full details.

Course Description

This course will provide an exploratory foundation in computer programming. It is designed to be taught in a 9-week rotation in 45-minute daily classes. Standards should be taught in the order presented with the exception of Standard 1 being an embedded standard with ongoing learning regarding employability and career opportunities. Through integrated instructional activities, students will have opportunities to apply employability skills and to research possible career options in the information technology area. They will also complete many hands-on activities to build a strong foundation in computer coding. Capstone projects should be incorporated at the completion of all standards as time allows. Students who successfully complete this course will be prepared for the following pathways upon entering high school: Internet of Things, Programming, and Computer Science. This course may be taught in 6th, 7th, or 8th grade.

Course Standards

MS-CS-FCP-1 Demonstrate employability skills required by business and industry and explore, research, and present careers in information technology.	CITATION(S)
1.1 Communicate effectively through writing, speaking, listening, reading, and interpersonal abilities.	Chapter 13
1.2 Demonstrate an understanding of collaborative interactions in the digital world.	Chapter 13

1.3 Model work-readiness traits required for success in the workplace including integrity, honesty, accountability, punctuality, time management, and respect for diversity.	Chapter 13
1.4 Exhibit critical thinking and problem-solving skills to locate, analyze, and apply information in career planning and employment situations.	Supplemental Chapter 3, Lessons 3 and 4
1.5 Present a professional image through appearance, behavior and language.	Chapter 13 Supplemental Chapter 3, Lessons 3 and 4
1.6 Investigate educational requirements, job responsibilities, employment trends, and opportunities within information technology career pathways using credible sources.	Supplemental Chapter 3, Lessons 3, 4

MS-CS-FCP-2 Explore and explain the basic components of computers and their relationships to programming.	CITATION(S)
2.1 Identify the basic components of the computer (processor, operating system, memory, storage, ethernet ports) by disassembling and reassembling a demonstration model personal computer (maybe done 'virtually' online if demo model is not available).	N/A (See Digital Savvy)
2.2 Demonstrate an understanding of key functional components (input/output devices, software applications, wi-fi and/or Ethernet, and IP addresses).	N/A (See Digital Savvy)
2.3 Demonstrate an understanding of the fundamental concepts for how computers process programming commands (hex, binary language, sequence of commands, conditional structures, looping structures)	Chapter 1, Lesson 3 Chapters 4, 6 Supplemental Chapter 3, Lesson 1

MS-CS-FCP-3 Utilize computational thinking to solve problems.	CITATION(S)
3.1 Make observations and organize the concepts of modularity, including functions and methods, as it relates to programming code reusability and cloud computing in the software industry.	Chapters 9, 10, 11
3.2 Develop a working vocabulary of computational thinking including sequences, algorithms, binary, pattern matching, decomposition, abstraction, parallelization, data, automation, data collection, data analysis, Boolean, integer, branches (if...then...else), and iteration {loops (For, While)}.	Throughout the course
3.3 Analyze the problem-solving process, the input-process-output-storage model of a computer, and how computers help humans solve problems.	Chapters 3, 5 Supplemental Chapter 3, Lesson 3 Supplemental Chapter 4, Lessons 3, 4

3.4 Develop an algorithm to decompose a problem of a daily task.	Supplemental Chapter 3, Lesson 3
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MS-CS-FCP-4 Design, develop, debug and implement computer programs.	CITATION(S)
4.1 Develop a working vocabulary of programming including flowcharting and/or storyboarding, coding, debugging, user interfaces, usability, variables, lists, loops, conditionals, programming language, and events.	Throughout the course
4.2 Utilize the design process to brainstorm, implement, test, and revise an idea.	Chapter 13
4.3 Cite evidence on how computers represent data and media (sounds, images, video, etc.).	Supplemental Chapter 2, Lessons 1, 2
4.4 Design a user interface and test with other users using a paper prototype.	Chapters 3, 13
4.5 Implement a simple algorithm in a computer program.	Chapters 9, 12, 13 Supplemental Chapter 3, Lesson 3
4.6 Develop an event driven program.	N/A
4.7 Create a program that accepts user and/or sensor input and stores the result in a variable.	Chapter 3
4.8 Create a computer program that implements a loop.	Chapter 6
4.9 Develop a program that makes a decision based on data or user input.	Chapter 4
4.10 Debug a program with an error.	Chapter 5

MS-CS-FCP-5 Explore the relationship between computer hardware and software.	CITATION(S)
5.1 Develop a working vocabulary of embedded computing including digital, analog, events, microcontrollers, sensors, light emitting diodes (LED), switches, servos, cloud computing, and internet of things.	N/A
5.2 Investigate how software interacts with hardware in the boot process.	N/A
5.3 Analyze and explain how computers communicate information with simple hardware inputs and outputs.	N/A
5.4 Create a product that analyzes how simple computer hardware can be used to develop innovative new products that interact with the physical world.	N/A

5.5 Design a computer program that senses something in the real world and changes an output based on the input.	N/A
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MS-CS-FCP-6 Create digital artifacts to address a current issue requiring resolution.	CITATION(S)
6.1 Summarize ethical, privacy, and legal issues of a digital world using current case studies.	Supplemental Chapter 2
6.2 Collaborate as a team to develop an artifact that represents multiple perspectives regarding a global crisis.	Chapter 13 Supplemental Chapter 4, Lessons 1, 3
6.3 Analyze and explain the functionality and suitability (or appropriateness) of a computational artifact.	Supplemental Chapter 4, Lesson 4
6.4 Develop a program for creative expression or to satisfy personal curiosity which may have visual, audible, and/or tactile results.	Chapter 13
6.5 Develop a program specifically with the goal of solving a problem, creating new knowledge, or helping people, organizations, or society.	Chapter 13