

COMPUTER SCIENCE II PERFORMANCE STANDARDS

Business education – course code 034401

The curriculum used must incorporate the following standards to qualify as Computer Science II credit.

COMPUTER SCIENCE II PERFORMANCE STANDARDS

Concept	Subconcept	Standard	
Computing Systems	Devices	11-12.CS.D.01	Illustrate ways computing systems implement logic through hardware components.
	Hardware & Software	11-12.CS.HS.01	Describe and categorize roles of an operating system.
	Troubleshooting	11-12.CS.T.01	Describe how hardware components facilitate logic, input, output and storage in computing systems.
Networks & the Internet	Network Communication & Organization	11-12.NI.NCO.01	Analyze the relationship between routers, switches, servers, topology and addressing.
		11-12.NI.NCO.02	Describe key protocols and underlying processes of internet-based services (e.g., http/https and Simple Mail Transfer Protocol (SMTP)/internet Message Access Protocol (IMAP), routing protocols).
		11-12.NI.NCO.03	Explain how the characteristics of the internet influence the systems developed on it.
	Cybersecurity	11-12.NI.C.01	Compare and refine ways in which software developers protect devices and information from unauthorized access.
		11-12.NI.C.02	Analyze cryptographic techniques to model the secure transmission of information.
Data & Analysis	Storage	11-12.DA.S.01	Compare different bit representations of data types, such as characters, Booleans and numbers while recognizing when using each data type is appropriate.
	Collection, Visualization & Transformation	11-12.DA.CVT.01	Generate data sets that use a variety of data collection tools and analysis techniques to support a claim and/or communicate information.
	Inference & Models	11-12.DA.IM.01	Evaluate the ability of models and simulations to test and support the refinement of hypotheses.
Algorithms & Programming	Algorithms	11-12.AP.A.01	Critically examine and trace classic algorithms (e.g., selection sort, insertion sort, binary search, linear search).
		11-12.AP.A.02	Implement an artificial intelligence algorithm to interact with a human or solve a problem.
		11-12.AP.A.03	Describe how artificial intelligence algorithms drive many software and physical systems (e.g., autonomous robots, computer vision, pattern recognition, text analysis).
		11-12.AP.A.04	Evaluate algorithms (e.g., sorting, searching) in terms of their efficiency and clarity.
	Variables	11-12.AP.V.01	Create problem solutions that utilize data structures (e.g., lists, arrays, ArrayLists).
	Control	11-12.AP.C.01	Trace the execution of iteration (e.g., loops, recursion), illustrating output and changes in values of named variables.
	Modularity	11-12.AP.M.01	Construct solutions to problems using student-created components (e.g., procedures, modules, objects).
		11-12.AP.M.02	Create programming solutions by reusing existing code (e.g., libraries, Application Programming Interface (APIs), code repositories).
		11-12.AP.M.03	Analyze a large-scale computational problem and identify generalizable patterns that can be applied to a solution.
Program Development	11-12.AP.PD.01	Use integrated development environments (IDEs) and collaborative tools and practices (code documentation) in a software project.	

Algorithms & Programming	Program Development	11-12.AP.PD.02	Plan and develop programs using a development process (e.g., waterfall, iterative, spiral, rapid application development, agile).
		11-12.AP.PD.03	Identify and compare features of various programming languages that make them useful for solving problems and developing systems.
		11-12.AP.PD.04	Design software using version control.
		11-12.AP.PD.05	Develop and use a series of test cases to verify that a program performs according to its design specifications.
		11-12.AP.PD.06	Explain security issues that might lead to compromised computer programs.
		11-12.AP.PD.07	Evaluate key qualities of a program through a process such as a code review.
Impacts of Computing	Culture	11-12.IC.C.01	Evaluate the impact of equity, access and influence on the distribution of computing resources in a global society.
	Safety, Laws & Ethics	11-12.IC.SLE.01	Debate laws and regulations that impact the development and use of software.

References:

Computer Science Teachers Association (2017). *CSTA K-12 Computer Science Standards, Revised 2017*. Retrieved from <http://www.csteachers.org/standards>