FIRIA LABS

Lift-Off – TEKS Fundamentals of Computer Science Curriculum

Updated 06/02/2024 by Jill Jones

Aligned with §127.788. Fundamentals of Computer Science (one credit), Adopted 2022.

This course is recommended for students in Grades 9-12.

Shall be implemented by school districts beginning with the 2023-2024 school year.

Source: The provisions of this §127.788 adopted to be effective August 7, 2022, 47 TexReg 4523.

KNOWLEDGE & SKILLS	Fundamentals of CS (Grades 9-12) No prerequisite	Mission / Lesson
(1) Employability. The student identifies various employment opportunities in the computer science field.	(A) Identify job and internship opportunities and accompanying job duties and tasks and contact one or more companies or organizations to explore career opportunities	Computer Science Careers
	(B) examine the role of certifications, resumes, and portfolios in the computer science profession	Computer Science Careers
	(C) Employ effective technical reading and writing skills	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project, Final CS Project *Extensions & Cross-curricular for missions 1-10*
	(D) Employ effective verbal and non-verbal communication skills	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project Web Pages, Final CS Project *Extensions & Cross-curricular for missions 1-10*
	(E) Solve problems and think critically	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project Pre-Mission, Web Pages Final CS Project *Extensions & Cross-curricular for missions 1-10*
	(F) Demonstrate leadership skills and function effectively as a team member	Final Coding Project Final CS Project *Extensions & Cross-curricular for missions 2-10*
	(G) Demonstrate an understanding of legal and ethical responsibilities in relation to the field of computer science	Pre-Mission Computer Science Careers *Extensions & Cross-curricular for mission 10*

	(H) Demonstrate planning and time-management skills	Final Coding Project Web Pages, Final CS Project *Extensions & Cross-curricular for missions 2-10*
	(I) Compare university computer science programs	Computer Science Careers
(2) Creativity and innovation. The student develops products and generates new knowledge, understanding, and skills.	(A) Investigate and explore various career opportunities within the computer science field and report findings through various media.	Computer Science Careers Web Pages
	(B) Create algorithms for the solution of various problems.	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project Pre-Mission, Web Pages *Extensions & Cross-curricular for missions 1-10*
	(C) Discuss methods and create and publish web pages using a web-based language such as HTML, Java Script, or XML	Web Pages
	(D) Use generally accepted design standards for spacing, fonts and color schemes to create functional user interfaces, including static and interactive screens.	Mission 4, MIssion 5, Mission 8 Mission 10 Web Pages *Extensions & Cross-curricular for missions 4-5, 8, 10*
(3) Communication and collaboration. The student communicates and collaborates with peers to contribute to his or her own learning and the learning of others.	(A) Seek and respond to advice or feedback from peers, educators, or professionals when evaluating problem solutions.	Final Coding Project *Extensions & Cross-curricular for missions 2-10*
	(B) Debug and solve problems using reference materials and effective strategies.	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project, Pre-Mission *Extensions & Cross-curricular for missions 1-10*
	(C) Publish information in a variety of ways such as print, monitor display, web pages, or video.	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project Technology Digital Citizenship Computer Science Careers Web Pages, Final CS Project *Extensions & Cross-curricular for missions 1-10*
(4) Critical thinking, problem solving, and decision making. The student uses appropriate strategies to analyze problems and design algorithms.	(A) Demonstrate the ability to insert external stand alone objects such as scripts or widgets into web pages.	Web Pages
	(B) Communicate an understanding of binary representation of data in computer systems, perform conversions between decimal and binary number systems, and count in binary number systems.	Pre-Mission, Technology *Extensions & Cross-curricular for mission 1*

	(C) Identify a problem's description, purpose and goals.	Mission 1, Mission 2, Mission 3 Mission 4, Mission 5, Mission 6 Mission 7, Mission 8, Mission 9 Mission 10, Final Coding Project Final CS Project *Extensions & Cross-curricular for missions 1-10*
	(D) Demonstrate coding proficiency in a programming language by developing solutions that create stories, games and animations.	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project *Extensions & Cross-curricular for missions 1-10*
	(E) Identify and use the appropriate data type to properly represent the data in a program problem solution.	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project, Pre-Mission *Extensions & Cross-curricular for missions 1-10*
	(F) Communicate an understanding of and use variables within a programmed story, game or animation.	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project, Pre-Mission *Extensions & Cross-curricular for missions 1-10*
	(G) Use arithmetic operators to create mathematical expressions, including addition, subtraction, multiplication, real division, integer division, and modulus division.	Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 10 Final Coding Project, Pre-Mission *Extensions & Cross-curricular for missions 3-10*
	(H) Communicate an understanding of and use sequence within a programmed story, game or animation.	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project, Pre-Mission *Extensions & Cross-curricular for missions 2-10*
	(I) Communicate an understanding of and use conditional statements within a programmed story, game or animation.	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project, Pre-Mission *Extensions & Cross-curricular for missions 2-10*
	(J) Communicate an understanding of and use iteration within a programmed story, game or animation.	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project, Pre-Mission

		Extensions & Cross-curricular for missions 2-10
	(K) Use random numbers within a programmed story, game or animation.	Mission 4 *Extensions & Cross-curricular for missions 2, 4*
	(L) Test program solutions by investigating intended outcomes.	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project *Extensions & Cross-curricular for missions 2-10*
(5) Digital citizenship. The student explores and understands safety, legal, cultural, and societal issues relating to the use of technology and information.	(A) Discuss privacy and copyright laws and model ethical acquisition of digital information by citing sources using established methods.	Digital Citizenship Web Pages
	(B) Compare various non-copyright asset sharing options such as open source, freeware and public domain.	Digital Citizenship
	(C) Demonstrate proper digital etiquette and knowledge of acceptable use policies when using networks.	Pre-Mission Digital Citizenship
	(D) Explain the value of strong passwords and virus detection and prevention for privacy and security.	Digital Citizenship
	(E) Discuss and give examples of the impact of computing and computing-related advancements on society	Mission 1 Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project, Pre-Mission Technology, Digital Citizenship Computer Science Careers Web Pages
	(F) Analyze how electronic media can affect the reliability of information.	Digital Citizenship
(6) Technology operations and concepts. The student understands technology concepts, systems, and operations as they apply to computer science.	(A) Identify and explain the function of basic computer components, including a central processing unit (CPU), storage, and peripheral devices.	Mission 1 Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project, Pre-Mission, Technology *Extensions & Cross-curricular for missions 1-10*
	(B) Use system tools, including appropriate file management.	Mission 1 Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project, Pre-Mission, Technology *Extensions & Cross-curricular for missions 1-10*
	(C) Compare different operating systems.	Technology
	(D) Describe the differences between an application and an operating system.	Technology

	(E) Use various input, processing, output and primary/secondary storage devices	Mission 1 Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project, Pre-Mission, Technology *Extensions & Cross-curricular for missions 1-10*

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