



Lift-Off with CodeX – TEKS Computer Science 1 Curriculum

Updated 06/06/2024 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	Computer Science I (Grades 9-12) Pre/Co-Requisite: Alg 1 Comparable to AP Computer Science Principles	Project / 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	Pre-Mission, Mission 1, Mission 2 Mission 3, Mission 4, Mission 5 Mission 6, Mission 7, Mission 8 Mission 9, Mission 10, Final Coding Project Technology & Digital Information Computer Science Careers Digital Citizenship, CodeX & Line Art Final Project <i>Extensions & Cross-curricular for missions 1-10</i>
	(D) Employ effective verbal and non-verbal communication skills	Pre-Mission, Mission 1, Mission 2 Mission 3, Mission 4, Mission 5 Mission 6, Mission 7, Mission 8 Mission 9, Mission 10, Final Coding Project Technology & Digital Information Computer Science Careers Digital Citizenship, CodeX & Line Art Final Project <i>Extensions & Cross-curricular for missions 1-10</i>
	(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 CodeX & Line Art, Final Project <i>Extensions & Cross-curricular for missions 2-10</i>
	(F) Demonstrate leadership skills and function effectively as a team member	Final Coding Project Technology & Digital Information Computer Science Careers Digital Citizenship, CodeX & Line Art Final Project <i>Extensions & Cross-curricular for missions 2-10</i>
	(G) Communicate an understanding of legal and ethical responsibilities in relation to the field of computer science	Computer Science Careers
	(H) Demonstrate planning and time-management skills	Final Coding Project Technology & Digital Information Computer Science Careers Digital Citizenship, CodeX & Line Art Final Project <i>Extensions & Cross-curricular for missions 2-10</i>
	(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) Participate in learning communities as a learner, initiator, contributor and teacher/mentor	Pre-Mission, Mission 1, Mission 2 Mission 3, Mission 4, Mission 5 Mission 6, Mission 7, Mission 8 Mission 9, Mission 10, Final Coding Project Technology & Digital Information Computer Science Careers Digital Citizenship, CodeX & Line Art Final Project <i>Extensions & Cross-curricular for missions 1-10</i>
	(B) Seek and respond to advice from peers, educators, or professionals when evaluating quality and accuracy of the student's product	Final Coding Project Technology & Digital Information Computer Science Careers Digital Citizenship, CodeX & Line Art Final Project <i>Extensions & Cross-curricular for missions 1-10</i>
(3) Programming style and presentation. The student utilizes	(A) Create and properly label and display output	Mission 3, Mission 4, Mission 5 Mission 6, Mission 7, Mission 8

proper programming style and develops appropriate visual presentation of data, input, and output.		Mission 9, Mission 10, Final Coding Project <i>Extensions & Cross-curricular for missions 3-10</i>
	(B) Create interactive input interfaces, with relevant user prompts, to acquire data from a user such as console displays or Graphic User Interfaces (GUIs)	Mission 3, Mission 4, Mission 5 Mission 6, Mission 7, Mission 8 Mission 9, Mission 10, Final Coding Project CodeX and Line Art <i>Extensions & Cross-curricular for missions 3-10</i>
	(C) Write programs with proper programming style to enhance the readability and functionality of a code by using descriptive identifiers, internal comments, white space, spacing, indentation, and a standardized program style	Pre-Mission, Mission 1, Mission 2 Mission 3, Mission 4, Mission 5 Mission 6, Mission 7, Mission 8 Mission 9, Mission 10, Final Coding Project CodeX & Line Art <i>Extensions & Cross-curricular for missions 1-10</i>
	(D) Format data displays using standard formatting styles	Mission 5, Mission 6, Mission 7, Mission 8, Mission 9, Mission 10, Final Coding Project <i>Extensions & Cross-curricular for missions 5-10</i>
	(E) Display simple vector graphics using lines, circles and rectangles	CodeX and Line Art
(4) Critical thinking, problem solving, and decision making. The student uses appropriate strategies to analyze problems and design algorithms.	(A) Use program design problem-solving strategies such as flowchart or pseudocode to create program solutions	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project CodeX and Line Art <i>Extensions & Cross-curricular for missions 2-10</i>
	(B) Create a high-level program plan using a visual tool such as a flowchart or graphic organizer	Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project CodeX and Line Art <i>Extensions & Cross-curricular for missions 6-10</i>
	(C) Identify the tasks and subtasks needed to solve a problem	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project

	CodeX and Line Art <i>Extensions & Cross-curricular for missions 2-10</i>
(D) Identify the data types and objects needed to solve a problem	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project CodeX and Line Art <i>Extensions & Cross-curricular for missions 2-10</i>
(E) Identify reusable components from existing code	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project <i>Extensions & Cross-curricular for missions 2-10</i>
(F) Design a solution to a problem	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project CodeX and Line Art <i>Extensions & Cross-curricular for missions 2-10</i>
(G) Code a solution from a program design	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project CodeX and Line Art <i>Extensions & Cross-curricular for missions 2-10</i>
(H) Identify error types, including syntax, lexical, run time and logic	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project CodeX and Line Art <i>Extensions & Cross-curricular for missions 2-10</i>
(I) Test program solutions with valid and invalid test data and analyze resulting behavior	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project <i>Extensions & Cross-curricular for missions 2-10</i>

	(J) Debug and solve problems using error messages, reference materials, language documentation and effective strategies	Mission 1 Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project CodeX and Line Art <i>Extensions & Cross-curricular for missions 2-10</i>
	(K) Create and implement common algorithms such as finding greatest common divisor, finding the biggest number out of three, finding primes, making change, and finding the average	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project CodeX and Line Art <i>Extensions & Cross-curricular for missions 2-10</i>
	(L) Create program solutions that address basic error handling such as preventing division by zero and type mismatch	Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project <i>Extensions & Cross-curricular for missions 5-10</i>
	(M) Select the most appropriate construct for a defined problem	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project CodeX and Line Art <i>Extensions & Cross-curricular for missions 2-10</i>
	(N) Create program solutions by using the 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 9, Mission 10 Final Coding Project CodeX and Line Art <i>Extensions & Cross-curricular for missions 3-10</i>
	(O) Create program solutions to problems using available mathematics library functions or operators, including absolute value, round, power, square and square root	Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project <i>Extensions & Cross-curricular for missions 5-10</i>
	(P) Develop program solutions that use assignment	Mission 1 Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10

		Final Coding Project CodeX and Line Art <i>Extensions & Cross-curricular for missions 2-10</i>
	(Q) Develop sequential algorithms to solve non-branching and non-iterative problems	Mission 1, CodeX and Line Art <i>Extensions & Cross-curricular for mission 1</i>
	(R) Develop algorithms to decision-making problems using branching control statements	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project <i>Extensions & Cross-curricular for missions 2-10</i>
	(S) develop iterative algorithms and code programs to solve practical problems	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project <i>Extensions & Cross-curricular for missions 2-10</i>
	(T) Demonstrate the appropriate use of relational operators	Mission 2, Mission 3, Mission 4 Mission 5, Mission 6, Mission 7 Mission 8, Mission 9, Mission 10 Final Coding Project <i>Extensions & Cross-curricular for missions 2-10</i>
	(U) Demonstrate the appropriate use of the logical operators	Mission 4, Mission 5 <i>Extensions & Cross-curricular for missions 4-5</i>
	(V) Generate and use random numbers	Mission 4, CodeX and Line Art
(5) Digital citizenship. The student explores and understands safety, legal, cultural, and societal issues relating to the use of technology and information.	(A) Discuss and explain intellectual property, privacy, sharing of information, copyright laws, and software licensing agreements	Digital Citizenship
	(B) Practice ethical acquisition and use of digital information	Digital Citizenship
	(C) Demonstrate proper digital etiquette, responsible use of software, and knowledge of acceptable use policies	Digital Citizenship
	(D) Investigate privacy and security measures, including strong passwords, pass phrases, and other methods of authentication and virus detection and prevention	Digital Citizenship
	(E) Investigate computing and computing-related advancements and the social and ethical ramifications of computer usage	Digital Citizenship
(6) Technology operations and concepts. The student understands	(A) Identify and describe the function of major hardware components, including primary and secondary memory, a central processing unit (CPU) and peripherals	Pre-Mission, Mission 1, Mission 2 Mission 3, Mission 4, Mission 5

<p>technology concepts, systems, and operations as they apply to computer science.</p>		<p>Mission 6, Mission 7, Mission 8 Mission 9, Mission 10, Final Coding Project Technology & Digital Information <i>Extensions & Cross-curricular for missions 1-10</i></p>
	(B) Differentiate between current programming languages, discuss the general purpose for each language, and demonstrate knowledge of specific programming terminology and concepts and types of software development applications	<p>Pre-Mission, Technology & Digital Information</p>
	(C) Differentiate between a high-level compiled language and an interpreted language	<p>Pre-Mission, Technology & Digital Information</p>
	(D) Identify and use concepts of object-oriented design	<p>Mission 2, Mission 3, Mission 4, Mission 5, Mission 6, Mission 7, Mission 8, Mission 9, Mission 10, Final Coding Project Technology & Digital Information <i>Extensions & Cross-curricular for missions 2-10</i></p>
	(E) Differentiate between local and global scope access variable declarations	<p>Mission 5, Mission 6, Mission 7, Mission 8, Mission 9, Mission 10, Final Coding Project CodeX and Line Art <i>Extensions & Cross-curricular for missions 5-10</i></p>
	(F) Encapsulate data and associated subroutines into an abstract data type	<p>Mission 5, Mission 6, Mission 7, Mission 8, Mission 9, Mission 10, Final Coding Project <i>Extensions & Cross-curricular for missions 5-10</i></p>
	(G) Create subroutines that do not return typed values with and without the use of arguments and parameters	<p>Mission 1 Mission 2, Mission 3, Mission 4, Mission 5, Mission 6, Mission 7, Mission 8, Mission 9, Mission 10, Final Coding Project CodeX and Line Art <i>Extensions & Cross-curricular for missions 1-10</i></p>
	(H) Create subroutines that return typed values with and without the use of arguments and parameters	<p>Mission 5, Mission 6, Mission 7, Mission 8, Mission 10, Final Coding Project <i>Extensions & Cross-curricular for missions 5-8, 10</i></p>

	(I) Create calls to processes passing arguments that match parameters by number, type and position	Mission 1, Mission 2, Mission 3, Mission 4, Mission 5, Mission 6, Mission 7, Mission 8, Mission 10, Final Coding Project CodeX and Line Art <i>Extensions & Cross-curricular for missions 1-8, 10</i>
	(J) Compare data elements using logical and relational operators	Mission 2, Mission 3, Mission 4, Mission 5, Mission 6, Mission 7, Mission 8, Mission 9, Mission 10, Final Coding Project <i>Extensions & Cross-curricular for missions 2-10</i>
	(K) Identify and convert binary representation of numeric and nonnumeric data in computer systems using American Standard Code for Information Interchange (ASCII) or Unicode	Pre-Mission Technology & Digital Information
	(L) Identify finite limits of numeric data such as integer wrap around and floating point precision	Mission 3, Mission 10 Technology & Digital Information <i>Extensions & Cross-curricular for missions 3, 0</i>
	(M) Perform numerical conversions between the decimal and binary number systems and count in the binary number system	Pre-Mission Technology & Digital Information
	(N) Choose, identify and use the appropriate data types for integer, real, and Boolean data when writing program solutions	Mission 1, Mission 2, Mission 3, Mission 4, Mission 5, Mission 6, Mission 7, Mission 8, Mission 9, Mission 10, Final Coding Project CodeX and Line Art <i>Extensions & Cross-curricular for missions 1-10</i>
	(O) Analyze the concept of a variable, including primitives and objects	Pre-Mission, Mission 1, Mission 2, Mission 3, Mission 4, Mission 5, Mission 6, Mission 7, Mission 8, Mission 9, Mission 10, Final Coding Project Technology & Digital Information CodeX and Line Art <i>Extensions & Cross-curricular for missions 1-10</i>
	(P) Represent and manipulate text data, including concatenation and other string functions	Mission 5, Mission 6, Mission 7, Mission 8, Mission 9, Mission 10, Final Coding Project <i>Extensions & Cross-curricular for missions 5-10</i>

	(Q) Identify and use the structured data type of one-dimensional arrays to traverse, search, and modify data	Mission 4, Mission 5 <i>Extensions & Cross-curricular for missions 4, 5</i>
	(R) Choose, identify and use the appropriate data type or structure to properly represent the data in a program problem solution	Pre-Mission, Mission 1, Mission 2, Mission 3, Mission 4, Mission 5, Mission 6, Mission 7, Mission 8, Mission 9, Mission 10, Final Coding Project CodeX and Line Art <i>Extensions & Cross-curricular for missions 1-10</i>
	(S) Compare strongly typed and un-typed programming languages	Technology & Digital Information