Python with Robotics (CodeBot) – TEKS Computer Science 1 Curriculum

Updated 06/04/2024 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	Overview, Project 1 Project 2, Remix Project 2 Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10 Technology & Digital Information Computer Science Careers Digital Citizenship, Final Project
	(D) Employ effective verbal and non-verbal communication skills	Overview, Remix Project 2 Remix Project 3, Remix Project 4 Remix Project 5, Remix Project 6 Remix Project 7, Remix Project 8 Project 9, Project 10 Technology & Digital Information Computer Science Careers Digital Citizenship, Final Project
	(E) Solve problems and think critically	Project 2, Remix Project 2 Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6

		Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10, Final Project
	(F) Demonstrate leadership skills and function effectively as a team member	Remix Project 2, Remix Project 3 Remix Project 4, Remix Project 5 Remix Project 6, Remix Project 7 Remix Project 8, Project 9 Project 10, Final Project
	(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	Remix Project 2, Remix Project 3 Remix Project 4, Remix Project 5 Remix Project 6, Remix Project 7 Remix Project 8, Project 9 Project 10, Final Project Technology & Digital Information Computer Science Careers Digital Citizenship
	(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	Overview, Remix Project 2 Remix Project 3, Remix Project 4 Remix Project 5, Remix Project 6 Remix Project 7, Remix Project 8 Project 9, Project 10 Technology & Digital Information Computer Science Careers Digital Citizenship, Final Project
	(B) Seek and respond to advice from peers, educators, or professionals when evaluating quality and accuracy of the student's product	Remix Project 2 Remix Project 3, Remix Project 4 Remix Project 5, Remix Project 6 Remix Project 7, Remix Project 8 Project 9, Project 10 Technology & Digital Information Computer Science Careers Digital Citizenship, Final Project
(3) Programming style and presentation. The student utilizes proper programming style and develops appropriate visual presentation of data, input, and output.	(A) Create and properly label and display output	Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10

	(B) Create interactive input interfaces, with relevant user prompts, to acquire data from a user such as console displays or Graphic User Interfaces (GUIs)	Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(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	Project 2, Remix Project 2 Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(D) Format data displays using standard formatting styles	Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(E) Display simple vector graphics using lines, circles and rectangles	
(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	Project 2, Remix Project 2 Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(B) Create a high-level program plan using a visual tool such as a flowchart or graphic organizer	Project 2, Remix Project 2 Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(C) Identify the tasks and subtasks needed to solve a problem	Project 2, Remix Project 2 Project 3, Remix Project 3 Project 4, Remix Project 4

		Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(D) Identify the data types and objects needed to solve a problem	Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(E) Identify reusable components from existing code	Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(F) Design a solution to a problem	Project 2, Remix Project 2 Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(G) Code a solution from a program design	Project 2, Remix Project 2 Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(H) Identify error types, including syntax, lexical, run time and logic	Project 2, Remix Project 2 Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8

		Project 9, Project 10
	(I) Test program solutions with valid and invalid test data and analyze resulting behavior	Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(J) Debug and solve problems using error messages, reference materials, language documentation and effective strategies	Project 2, Remix Project 2 Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(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	Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(L) Create program solutions that address basic error handling such as preventing division by zero and type mismatch	Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(M) Select the most appropriate construct for a defined problem	Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(N) Create program solutions by using the arithmetic operators to create mathematical expressions, including addition, subtraction, multiplication, real division, integer division, and modulus division	Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(O) Create program solutions to problems using available mathematics library functions or operators, including absolute value, round, power, square and square root	Project 5, Remix Project 5 Project 6, Remix Project 6

		Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(P) Develop program solutions that use assignment	Project 2, Remix Project 2 Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(Q) Develop sequential algorithms to solve non-branching and non-iterative problems	Project 2, Remix Project 2 Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(R) Develop algorithms to decision-making problems using branching control statements	Project 2, Remix Project 2 Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(S) develop iterative algorithms and code programs to solve practical problems	Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(T) Demonstrate the appropriate use of relational operators	Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10

	(U) Demonstrate the appropriate use of the logical operators	Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(V) Generate and use random numbers	Project 3, Remix Project 3 Remix Project 4 Project 5, Remix Project 5 Project 9, Project 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 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 technology concepts, systems, and operations as they apply to computer science.	(A) Identify and describe the function of major hardware components, including primary and secondary memory, a central processing unit (CPU) and peripherals	Overview, Project 1 Project 4, Project 8 Technology & Digital Information
	(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	Overview Technology & Digital Information
	(C) Differentiate between a high-level compiled language and an interpreted language	Overview Technology & Digital Information
	(D) Identify and use concepts of object-oriented design	Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10 Technology & Digital Information
	(E) Differentiate between local and global scope access variable declarations	Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 9, Project 10

	(F) Encapsulate data and associated subroutines into an abstract data type	Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(G) Create subroutines that do not return typed values with and without the use of arguments and parameters	Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(H) Create subroutines that return typed values with and without the use of arguments and parameters	Project 4, Remix Project 4 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(I) Create calls to processes passing arguments that match parameters by number, type and position	Project 2, Remix Project 2 Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(J) Compare data elements using logical and relational operators	Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(K) Identify and convert binary representation of numeric and nonnumeric data in computer systems using American Standard Code for Information Interchange (ASCII) or Unicode	Project 1 Project 2, Remix Project 2 Project 4, Remix Project 4 Technology & Digital Information
	(L) Identify finite limits of numeric data such as integer wrap around and floating point precision	Project 7, Remix Project 7 Technology & Digital Information
	(M) Perform numerical conversions between the decimal and binary number systems and count in the binary number system	Project 1, Project 2 Project 4, Remix Project 4

		Technology & Digital Information
	(N) Choose, identify and use the appropriate data types for integer, real, and Boolean data when writing program solutions	Project 2, Remix Project 2 Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(O) Analyze the concept of a variable, including primitives and objects	Project 2, Remix Project 2 Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(P) Represent and manipulate text data, including concatenation and other string functions	Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(Q) Identify and use the structured data type of one-dimensional arrays to traverse, search, and modify data	Project 5, Remix Project 5 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(R) Choose, identify and use the appropriate data type or structure to properly represent the data in a program problem solution	Project 3, Remix Project 3 Project 4, Remix Project 4 Project 5, Remix Project 5 Project 6, Remix Project 6 Project 7, Remix Project 7 Project 8, Remix Project 8 Project 9, Project 10
	(S) Compare strongly typed and un-typed programming languages	Technology & Digital Information

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