# Python with Robotics (CodeBot) – TEKS Technology Applications Grade 8 Curriculum

Updated 06/03/2024 by Jill Jones

| KNOWLEDGE & SKILLS | Technology Applications Grade 8 No prerequisite | Project / Lesson |
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| **(1) Computational thinking - foundations.** The student explores the core concepts of computational thinking, a set of problem-solving processes that involve decomposition, pattern recognition, abstraction, and algorithms. | (A) decompose real-world problems into structured parts by using pseudocode | Project 2, Remix 2<br>Project 3, Remix 3<br>Project 4, Remix 4<br>Project 5, Remix 5<br>Project 6, Remix 6<br>Design Process<br>*Project 7, Remix 7*<br>*Project 8, Remix 8*<br>*Project 9, Project 10* |
| | (B) analyze the patterns and sequences found in pseudocode and identify its variables | Project 3, Remix 3<br>Project 4, Remix 4<br>Project 5, Remix 5<br>Project 6, Remix 6<br>Design Process<br>*Project 7, Remix 7*<br>*Project 8, Remix 8*<br>*Project 9, Project 10* |
| | (C) practice abstraction by developing a generalized algorithm that can solve different types of problems | Project 5, Remix 5<br>Project 6, Remix 6<br>Design Process<br>*Project 7, Remix 7*<br>*Project 8, Remix 8*<br>*Project 9, Project 10* |
| | (D) design a plan collaboratively using pseudocode to document a problem, possible solutions, and an expected timeline for the development of a coded solution | Remix 3, Remix 4<br>Remix 5, Remix 6<br>Design Process<br>*Project 7, Remix 7*<br>*Project 8, Remix 8*<br>*Project 9, Project 10* |
| | (E) develop, compare, and improve algorithms for a specific task to solve a problem | Project 5, Remix 5<br>Project 6, Remix 6<br>Design Process<br>*Project 7, Remix 7*<br>*Project 8, Remix 8*<br>*Project 9, Project 10* |
| | (F) analyze the benefits of using iteration (code and sequence repetition) in algorithms | Project 3, Remix 3<br>Project 4, Remix 4<br>Project 5, Remix 5 |

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| | | Project 6, Remix 6<br>Design Process<br>*Project 7, Remix 7*<br>*Project 8, Remix 8*<br>*Project 9, Project 10* |
| **(2) Computational thinking - applications.** The student applies the fundamentals of computer science. | (A) construct named variables with multiple data types and perform operations on their values | Project 3, Remix 3<br>Project 4, Remix 4<br>Project 5, Remix 5<br>Project 6, Remix 6<br>Digital Information<br>*Project 7, Remix 7*<br>*Project 8, Remix 8*<br>*Project 9, Project 10* |
| | (B) use a software design process to create text-based programs with nested loops that address different subproblems within a real-world context | Project 3, Remix 3<br>Project 4, Remix 4<br>Project 5, Remix 5<br>Project 6, Remix 6<br>Design Process<br>*Project 7, Remix 7*<br>*Project 8, Remix 8*<br>*Project 9, Project 10* |
| | (C) modify and implement previously written code to develop improved programs | Remix 2<br>Project 3, Remix 3<br>Project 4, Remix 4<br>Project 5, Remix 5<br>Project 6, Remix 6<br>Cybersecurity<br>*Project 7, Remix 7*<br>*Project 8, Remix 8*<br>*Project 9, Project 10* |
| **(3) Creativity and innovation - innovative design process.** The student takes an active role in learning by using a design process and creative thinking to develop and evaluate solutions, considering a variety of local and global perspectives. | (A) demonstrate innovation in a design process using goal setting and personal character traits, including demonstrating calculated risk-taking and tolerance | Project 2, Remix 2<br>Project 3, Remix 3<br>Project 4, Remix 4<br>Project 5, Remix 5<br>Project 6, Remix 6<br>Design Process<br>*Project 7, Remix 7*<br>*Project 8, Remix 8*<br>*Project 9, Project 10* |
| | (B) discuss and implement a design process that includes planning, selecting digital tools to develop, test and evaluate design limitations, and refining a prototype or model | Remix 2, Remix 3, Remix 4<br>Remix 5, Remix 6<br>Design Process<br>*Remix 7, Remix 8*<br>*Project 9, Project 10* |
| | (C) identify how the design process is used in various industries | Design Process |
| **(4) Creativity and innovation - emerging technologies.** The student | (A) evaluate how changes in technology throughout history have impacted various areas of study | What is Computer Science?<br>Technology & Trends |

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| demonstrates a thorough understanding of the role of technology throughout history and its impact on societies. | (B) evaluate and predict how global trends impact the development of technology | What is Computer Science?<br>Technology & Trends |
| | (C) transfer current knowledge to the learning of newly encountered technologies | Project 2, Remix 2<br>Project 3, Remix 3<br>Project 4, Remix 4<br>Project 5, Remix 5<br>Project 6, Remix 6<br>Data & Trends, Cybersecurity<br>*Project 7, Remix 7*<br>*Project 8, Remix 8*<br>*Project 9, Project 10* |
| **(5) Data literacy, management, and representation - collect data.** The student uses advanced digital strategies to collect and represent data. | (A) compare and contrast data types, including binary, integers, real numbers, Boolean data, and text-based representations | Project 2, Remix 2<br>Project 3, Remix 3<br>Project 4, Remix 4<br>Project 5, Remix 5<br>Project 6, Remix 6<br>Digital Information<br>*Project 7, Remix 7*<br>*Project 8, Remix 8*<br>*Project 9, Project 10* |
| | (B) apply appropriate search strategies, including keywords, Boolean operators, and limiters, to achieve a specified outcome that includes a variety of file formats | Searches |
| **(6) Data literacy, management, and representation - organize, manage, and analyze data.** The student uses digital tools to transform data, make inferences, and predictions. | (A) use digital tools in order to transform data, analyze trends, and predict possibilities and develop steps for the creation of an innovative process or product | Project 3, Remix 3<br>Project 4, Remix 4<br>Project 5, Remix 5<br>Project 6, Remix 6<br>Data & Trends, Searches<br>*Project 7, Remix 7*<br>*Project 8, Remix 8*<br>*Project 9, Project 10* |
| **(7) Data literacy, management, and representation - communicate and publish results**. The student creates digital products to communicate data to an audience for an intended purpose. | (A) use digital tools to communicate and publish data from a product or process to persuade an intended audience | Project 1, Project 2, Remix 2<br>Project 3, Remix 3<br>Project 4, Remix 4<br>Project 5, Remix 5<br>Project 6, Remix 6<br>What is Computer Science?<br>Technology & Trends<br>Data & Trends, Searches<br>Digital Citizenship, Cybersecurity<br>Intellectual Property<br>*Project 7, Remix 7*<br>*Project 8, Remix 8*<br>*Project 9, Project 10* |
| **(8) Digital citizenship - social interactions.** The student understands different styles of digital communication and that a student's | (A) analyze the importance of managing a digital footprint and how a digital footprint can affect the future | Digital Citizenship |
| | (B) create and revise formal and informal communications using a feedback process and | Digital Citizenship |

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| actions online can have a long-term impact. | appropriate digital etiquette | |
| | (C) collaborate and publish for a global audience on digital platforms such as recording and editing videos using appropriate formal and informal digital etiquette | Digital Citizenship |
| **(9) Digital citizenship - ethics and laws.** The student recognizes and practices responsible, legal, and ethical behavior while using digital tools and resources. | (A) adhere to local acceptable use policy (AUP) and practice and advocate for safe, ethical, and positive online behaviors | Digital Citizenship<br>Cybersecurity |
| | (B) adhere to appropriate intellectual property law when creating digital products | Intellectual Property |
| | (C) create citations and cite sources for a variety of digital forms of intellectual property | Intellectual Property |
| | (D) evaluate the bias of digital information sources, including websites | Intellectual Property |
| **(10) Digital citizenship - privacy, safety, and security.** The student practices safe, legal and ethical digital behaviors to become a socially responsible digital citizenship. | (A) analyze real-world scenarios to identify cybersecurity threats and propose ways to prevent harm | Cybersecurity |
| | (B) evaluate scenarios or case studies to identify warning signs of a cyberbullying victim such as withdrawal or lack of sleep and predict the outcomes for both the victim and the bully | Cybersecurity |
| **(11) Practical technology concepts - processes.** The student evaluates and selects appropriate methods or techniques for an independent project and identifies and solves common hardware and software problems using troubleshooting strategies. | (A) combine various file formats for a specific project or audience | Technology & Trends<br>Data & Trends<br>Digital Citizenship, Cybersecurity<br>Intellectual Property |
| | (B) share and seek feedback on files in various formats, including text, raster and vector graphics, video and audio files | Digital Information<br>Digital Citizenship |
| **(12) Practical technology concepts - skills and tools.** The student leverages technology systems, concepts, and operations to produce digital artifacts. | (A) integrate use of appropriate technology terminology in scholarly inquiry and dialogue such as classroom discussion and written samples | Project 3, Remix 3<br>Project 4, Remix 4<br>Project 5, Remix 5<br>Project 6, Remix 6<br>Technology & Trends<br>Data & Trends<br>Files & File Management<br>Digital Citizenship, Cybersecurity<br>Intellectual Property<br>*Project 7, Remix 7*<br>*Project 8, Remix 8*<br>*Project 9, Project 10* |
| | (B) implement effective file management strategies independently, including file naming conventions, local and remote locations, backup, hierarchy, folder structure, file conversion, tags, and emerging digital organizational strategies | Files & File Management |
| | (C) select and use the appropriate platform and tools, including selecting and using software or hardware to transfer data | Project 1, Project 2, Remix 2<br>Project 3, Remix 3<br>Project 4, Remix 4<br>Project 5, Remix 5<br>Project 6, Remix 6<br>Technology & Trends<br>Data & Trends |

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| | | Digital Citizenship, Cybersecurity<br>Intellectual Property<br>*Project 7, Remix 7*<br>*Project 8, Remix 8*<br>*Project 9, Project 10* |
| | (D) demonstrate improvement in speed and accuracy as measured by words per minute when applying correct keyboarding techniques | Data & Trends |
| | (E) select and use appropriate shortcuts within applications | Project 1, Project 2, Remix 2<br>Project 3, Remix 3<br>Project 4, Remix 4<br>Project 5, Remix 5<br>Project 6, Remix 6<br>*Project 7, Remix 7*<br>*Project 8, Remix 8*<br>*Project 9, Project 10* |
| | (F) apply appropriate troubleshooting techniques and seek technical assistance as needed | Remix 2<br>Project 3, Remix 3<br>Project 4, Remix 4<br>Project 5, Remix 5<br>Project 6, Remix 6<br>Technology & Trends<br>Data & Trends<br>*Project 7, Remix 7*<br>*Project 8, Remix 8*<br>*Project 9, Project 10* |
| | (G) compare types of local and remote data storage such as cloud architecture or local server and select the appropriate type of storage to store and share data | Files & File Management |
| | (H) select and use productivity tools found in spreadsheet, word processing, and publication applications to create digital artifacts including reports, graphs, and charts with increasing complexity | Remix 2<br>Project 3, Remix 3<br>Project 4, Remix 4<br>Project 5, Remix 5<br>Project 6, Remix 6<br>What is Computer Science?<br>Technology & Trends<br>Data & Trends<br>Digital Citizenship, Cybersecurity<br>Intellectual Property<br>*Project 7, Remix 7*<br>*Project 8, Remix 8*<br>*Project 9, Project 10* |

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