STEAM Curriculum

Grades K-2

Curriculum Overview

"""New approaches necessary for solving the critical challenges that we face as a society will require harnessing the power of technology and computing. Rapidly changing technologies and the proliferation of digital information have permeated and radically transformed learning, working, and everyday life. To be well-educated, global-minded individuals in a computing-intensive world, students must have a clear understanding of the concepts and practices of computer science. As education systems adapt to a vision of students who are not just computer users but also computationally literate creators who are proficient in the concepts and practices of computer science and design thinking, engaging students in computational thinking and human-centered approaches to design through the study of computer science and technology serves to prepare students to ethically produce and critically consume technology.""

Reference: New Jersey Department of Education. New Jersey Student Learning Standards, 2020."

Unit Title	Timeframe	New Jersey Student Learning Standards
Tech Tools	*September (1 month)*	*Computer Standards:* *8.1.2.CS.1: Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences.* *8.1.2.CS.2: Explain the functions of common software and hardware components of computing systems.* *8.1.2.CS.3: Describe basic hardware and software problems using accurate terminology.* *8.1.2.DA.1: Collect and present data, including climate change data, in various visual formats.* *8.1.2.DA.2: Store, copy, search, retrieve, modify, and delete data using a computing device.* *8.2.2.EC.1: Identify and compare technology used in different schools, communities, regions, and parts of the world.* *Career Standards:* *9.4.2.IML.1: Identify a simple search term to find information in a search engine or digital resource.* *9.4.2.IML.2: Represent data in a visual format to tell a story about the data (e.g., 2.MD.D.10).* *9.4.2.IML.3: Use a variety of sources including multimedia sources to find information about topics such as climate change, with guidance and support from adults (e.g., 6.3.2.GeoGI.2, 6.1.2.HistorySE.3, W.2.6, 1-LSI-2).* *9.4.2.IML.4: Compare and contrast the way information is shared in a variety of contexts (e.g., social, academic, athletic) (e.g., 2.2.2.MSC.5, RL.2.9).* *• 9.4.2.TL.1: Identify the basic features of a digital tool and explain the purpose of the tool (e.g., 8.2.2.ED.1).* *• 9.4.2.TL.2: Create a document using a word processing application.* *• 9.4.2.TL.3: Enter information into a spreadsheet and sort the information.* *• 9.4.2.TL.4: Navigate a virtual space to build context and describe the visual content.* *• 9.4.2.TL.5: Describe the difference between real and virtual experiences.* *• 9.4.2.TL.6: Illustrate and communicate ideas and stories using multiple digital tools (e.g., SL.2.5.).* *9.4.2.TL.7: Describe the benefits of collaborating with others to complete digital tasks or develop digital artifacts (e.g., W.2.6., 8.2.2.ED.2).* *9.4.2.CT.1: Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2).* *• 9.4.2.CT.2: Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3).* *9.4.2.DC.7: Describe actions peers can take to positively impact climate change (e.g., 6.3.2.CivicsPD.1).*
Coding and Typing	*All Year (once a week)*	*Computer Standards* *8.1.2.AP.1: Model daily processes by creating and following algorithms to complete tasks.* *8.1.2.AP.2: Model the way programs store and manipulate data by using numbers or other symbols to represent information.* *8.1.2.AP.3: Create programs with sequences and simple loops to accomplish tasks.* *8.1.2.AP.3: Create programs with sequences and simple loops to accomplish tasks.* *8.1.2.AP.5: Describe a program's sequence of events, goals, and expected outcomes.* *8.1.2.AP.6: Debug errors in an algorithm or program that includes sequences and simple loops.* *Carreer Standards:* *• 9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive).*

Internet Safety	*October, November, December (3 month)*	*Computer Standards:* *8.1.2.NI.1: Model and describe how individuals use computers to connect to other individuals, places, information, and ideas through a network.* *8.1.2.NI.2: Describe how the Internet enables individuals to connect with others worldwide.* *8.1.2.NI.3: Create a password that secures access to a device. Explain why it is important to create unique passwords that are not shared with others.* *8.1.2.NI.4: Explain why access to devices need to be secured.* *Career Standards:* *9.1.2. FI.1: Differentiate the various forms of money and how they are used (e.g., coins, bills, checks, debit and credit cards).* *9.4.2.DC.3: Explain how to be safe online and follow safe practices when using the internet (e.g., 8.1.2.NI.3, 8.1.2.NI.4).* *• 9.4.2.DC.4: Compare information that should be kept private to information that might be madepublic.* *9.4.2.DC.5: Explain what a digital footprint is and how it is created.* *9.4.2.DC.6: Identify respectful and responsible ways to communicate in digital environments.* *9.4.2.GCA:1: Articulate the role of culture in everyday life by describing one's own culture and comparing it to the cultures of other individuals (e.g., 1.5.2.C2a, 7.1.NL.IPERS.5, 7.1.NL.IPERS.6).*
Structures and Mechanisms	*January, February, March (3 month)*	*Computer Standards:* *8.1.2.DA.3: Identify and describe patterns in data visualizations.* *8.1.2.DA.4: Make predictions based on data using charts or graphs.* *8.2.2.NT.1: Model and explain how a product works after taking it apart, identifying the relationship of each part, and putting it back together.* *8.2.2.NT.2: Brainstorm how to build a product, improve a designed product, fix a product that has stopped working, or solve a simple problem.* *8.2.2.ITH.3: Identify how technology impacts or improves life.* *8.2.2.ITH.4: Identify how various tools reduce work and improve daily tasks.* *8.2.2.ITH.5: Design a solution to a problem affecting the community in a collaborative team and explain the intended impact of the solution.* *• 8.2.2.ETW.1: Classify products as resulting from nature or produced as a result of technology. •* *8.2.2.ETW.2: Identify the natural resources needed to create a product. •* *8.2.2.ETW.3: Describe or model the system used for recycling technology. •* *8.2.2.ETW.4: Explain how the disposal of or reusing a product affects the local and global environment.* *Career Standards:* *9.1.2.CR.1: Recognize ways to volunteer in the classroom, school and community.* *• 9.1.2.CR.2: List ways to give back, including making donations, volunteering, and starting a business.* *9.1.2.RM.1: Describe how valuable items might be damaged or lost and ways to protect them.* *9.1.2.CAP.1: Make a list of different types of jobs and describe the skills associated with each job.* *9.1.2.CAP.2: Explain why employers are willing to pay individuals to work.* *• 9.1.2.CAP.3: Define entrepreneurship and social entrepreneurship.* *• 9.1.2.CAP.4: List the potential rewards and risks to starting a business.*
Engineering Thinking	*April, May June (3 month)*	*Computer Standards:* *8.1.2.IC.1: Compare how individuals live and work before and after the implementation of new computing technology.* *8.2.2.ED.1: Communicate the function of a product or device.* *8.2.2.ED.2: Collaborate to solve a simple problem, or to illustrate how to build a product using the design process.* *8.2.2.ED.3: Select and use appropriate tools and materials to build a product using the design process.* *8.2.2.ED.4: Identify constraints and their role in the engineering design process.* *8.2.2.ITH.1: Identify products that are designed to meet human wants or needs.* *8.2.2.ITH.2: Explain the purpose of a product and its value.* *Career Standards:* *9.1.2.FP.1: Explain how emotions influence whether a person spends or saves.* *External factors can influence the items that an individual wants or needs.* *• 9.1.2.FP.2: Differentiate between financial wants and needs.* *• 9.1.2.FP.3: Identify the factors that influence people to spend or save (e.g., commercials, family, culture, society).* *9.1.2.PB.1: Determine various ways to save and places in the local community that help people save and accumulate money over time.* *• 9.4.2.CI.1: Demonstrate openness to new ideas and perspectives (e.g., 1.1.2.CR1a, 2.1.2.EH.1, 6.1.2.CivicsCM.2).* *• 9.4.2.CI.2: Demonstrate originality and inventiveness in work (e.g., 1.3A.2CR1a).* *• 9.4.2.DC.1: Explain differences between ownership and sharing of information.* *• 9.4.2.DC.2: Explain the importance of respecting digital content of others.*