STEAM Curriculum		
3 - 5		
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**
Digital Citizenship	*2 Months (September, October)*	8.1.5.CS.1: Model how computing devices connect to other components to form a system.. 8.1.5.CS.2: Model how computer software and hardware work together as a system to accomplish tasks. 8.1.5.CS.3: Identify potential solutions for simple hardware and software problems using common troubleshooting strategies. 8.1.5.NI.1: Develop models that successfully transmit and receive information using both wired and wireless methods. 8.1.5.NI.2: Describe physical and digital security measures for protecting sensitive personal information.
Innovation and Invention	*2 Months (November, December, some of January)*	• 8.1.5.IC.1: Identify computing technologies that have impacted how individuals live and work and describe the factors that influenced the changes. • 8.1.5.IC.2: Identify possible ways to improve the accessibility and usability of computing technologies to address the diverse needs and wants of users. 8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim. 8.1.5.DA.2: Compare the amount of storage space required for different types of data. • 8.1.5.DA.3: Organize and present collected data visually to communicate insights gained from different views of the data. • 8.1.5.DA.4: Organize and present climate change data visually to highlight relationships or support a claim. 8.1.5.DA.5: Propose cause and effect relationships, predict outcomes, or communicate ideas using data. 8.2.5.ED.4: Explain factors that influence the development and function of products and systems (e.g., resources, criteria, desired features, constraints). 8.2.5.ITH.1: Explain how societal needs and wants influence the development and function of a product and a system. • 8.2.5.ITH.2: Evaluate how well a new tool has met its intended purpose and identify any shortcomings it might have. • 8.2.5.ITH.3: Analyze the effectiveness of a new product or system and identify the positive and/or negative consequences resulting from its use. • 8.2.5.ITH.4: Describe a technology/tool that has made the way people live easier or has led to a new business or career. 8.2.5.NT.2: Identify new technologies resulting from the demands, values, and interests of individuals, businesses, industries, and societies. • 8.2.5.NT.3: Redesign an existing product for a different purpose in a collaborative team. • 8.2.5.NT.4: Identify how improvement in the understanding of materials science impacts technologies.

	2 months (January, February)	*8.1.5.AP.1: Compare and refine multiple algorithms for the same task and determine which is the most appropriate.* *8.1.5.AP.2: Create programs that use clearly named variables to store and modify data.* *8.1.5.AP.3: Create programs that include sequences, events, loops, and conditionals.* *• 8.1.5.AP.4: Break down problems into smaller, manageable sub-problems to facilitate program development.* *• 8.1.5.AP.5: Modify, remix, or incorporate pieces of existing programs into one's own work to add additional features or create a new program.* *8.1.5.AP.6: Develop programs using an iterative process, implement the program design, and test the program to ensure it works as intended.* *• 8.2.5.ED.5: Describe how specifications and limitations impact the engineering design process.* *• 8.2.5.ED.6: Evaluate and test alternative solutions to a problem using the constraints and tradeoffs identified in the design process.* *• 8.2.5.ED.1: Explain the functions of a system and its subsystems.* *• 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.* *• 8.2.5.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.* *8.2.5.NT.1: Troubleshoot a product that has stopped working and brainstorm ideas to correct the problem.*
LEGO Robotics		

		Careers: *9.1.5.CP.1: Identify the advantages of maintaining a positive credit* *history.* *9.1.5.CR.1: Compare various ways to give back and relate them to your* *strengths, interests, and other personal factors• 9.1.5.EG.1: Explain and give examples of what is meant by the term* *"tax."* *• 9.1.5.EG.2: Describe how tax monies are spent* *There is a broader economic system that influences your* *financial goals.* *• 9.1.5.EG.3: Explain the impact of the economic system on one's personal* *financial goals.* *• 9.1.5. EG.4: Describe how an individual's financial decisions affect* *society and contribute to the overall economy.* *There are agencies, laws, and resources to protect* *individuals as consumers.* *9.1.5. EG.5: Identify sources of consumer protection and assistance.9.1.5.FI.1: Identify various types of financial institutions and the services* *they offer including banks, credit unions, and credit card companies* *9.1.5.FP.1: Illustrate the impact of financial traits on financial decisions.* *• 9.1.5.FP.2: Identify the elements of being a good steward of money.* *Spending choices and their intended and unintended* *consequences impact financial outcomes and personal wellbeing.* *• 9.1.5.FP.3: Analyze how spending choices and decision-making can* *result in positive or negative consequences.* *• 9.1.5.FP.4: Explain the role of spending money and how it affects wellbeing and happiness (e.g., "happy money," experiences over things,* *donating to causes, anticipation, etc.).* *Not all financial information is accurate or truthful. 9.1.5.FP.5: Illustrate how inaccurate information is disseminated through* *various external influencers including the media, advertisers/marketers,* *friends, educators, and family members.* *9.1.5.PB.1: Develop a personal budget and explain how it reflects* *spending, saving, and charitable contributions.* *Saving money can impact an individual's ability to address* *emergencies and accomplish their short-and long-term* *goals.* *9.1.5.PB.2: Describe choices consumers have with money (e.g., save,* *spend, donate).* *9.1.5.RMI.1: Identify risks that individuals and households face.* *• 9.1.5.RMI.2: Justify reasons to have insurance.* *9.2.5.CAP.1: Evaluate personal likes and dislikes and identify careers that might be* *suited to personal likes.* *• 9.2.5.CAP.2: Identify how you might like to earn an income.* *• 9.2.5.CAP.3: Identify qualifications needed to pursue traditional and non-traditional* *careers and occupations.* *• 9.2.5.CAP.4: Explain the reasons why some jobs and careers require specific training,* *skills, and certification (e.g., life guards, child care, medicine, education) and examples* *of these requirements.* *Income and benefits can vary depending on the* *employer and type of job or career.* *9.2.5.CAP.5: Identify various employee benefits, including income, medical, vacation* *time, and lifestyle benefits provided by different types of jobs and careers.* *There are a variety of factors to consider before* *starting a business.* *• 9.2.5.CAP.6: Compare the characteristics of a successful entrepreneur with the traits of* *successful employees.* *• 9.2.5.CAP.7: Identify factors to consider before starting a business.* *Individuals can choose to accept inevitable risk* *or take steps to protect themselves by avoiding* *or reducing risk.* *• 9.2.5.CAP.8: Identify risks that individuals and households face.* *• 9.2.5.CAP.9: Justify reasons to have insurance.* *9.4.5.CI.1: Use appropriate communication technologies to collaborate with individuals with* *diverse perspectives about a local and/or global climate change issue and deliberate about* *possible solutions (e.g., W.4.6, 3.MD.B.3,7.1.NM.IPERS.6).* *• 9.4.5.CI.2: Investigate a persistent local or global issue, such as climate change, and collaborate* *with individuals with diverse perspectives to improve upon current actions designed to address* *the issue (e.g., 6.3.5.CivicsPD.3, W.5.7).*
	5th Grade (all year)	*Curiosity and a willingness to try new ideas* *(intellectual risk-taking) contributes to the* *development of creativity and innovation* *skills.* *• 9.4.5.CI.3: Participate in a brainstorming session with individuals with diverse perspectives to* *expand one's thinking about a topic of curiosity (e.g., 8.2.5.ED.2, 1.5.5.CR1a).*

Sustainability	*4 Months (March, April, May, June)*	8.2.5.ETW.1: Describe how resources such as material, energy, information, time, tools, people, and capital are used in products or systems. • 8.2.5.ETW.2: Describe ways that various technologies are used to reduce improper use of resources. • 8.2.5.ETW.3: Explain why human-designed systems, products, and environments need to be constantly monitored, maintained, and improved. • 8.2.5.ETW.4: Explain the impact that resources, such as energy and materials used to develop technology, have on the environment. • 8.2.5.ETW.5: Identify the impact of a specific technology on the environment and determine what can be done to increase positive effects and to reduce any negative effects, such as climate change. 8.2.5.EC.1: Analyze how technology has contributed to or reduced inequities in local and global communities and determine its short- and long-term effects. Careers: 9.1.5.CR.1: Compare various ways to give back and relate them to your strengths, interests, and other personal factors.