Marking Period	Unit Title	Recommended Instructional Days
3	Robotics/Programming	Approximately 10-12 days (Meet Once Per Week)

Disciplinary Concept:	Practice:	
CS DA AP ED ITH	Fostering an Inclusive Computing and Design Culture Recognizing and Defining Computational Problems Developing and Using Abstractions Communicating About Computing and Design	**Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-CSDT within Unit**
Core Idea:	**Performance Expectation/s:**	
Individuals use computing devices to perform a variety of tasks accurately and quickly. Individuals collect, use, and display data about individuals and the world around them. Computers follow precise sequences of steps that automate tasks. Engineering design is a creative process for meeting human needs or wants that can result in multiple solutions. Human needs and desires determine which new tools are developed.	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.DA.1: Collect and present data, including climate change data, in various visual formats. 8.1.2.AP.3: Create programs with sequences and simple loops to accomplish tasks. 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.ITH.1: Identify products that are designed to meet human wants or needs.	**Essential Question/s:** How do we manipulate materials when building? How can a design be affected by a constraint on materials? How can we communicate our design ideas and use the design process when working with a group? How do organisms change over their life cycle in relation to their environments? How can writing be used as a tool by scientists and other professionals? How can we conduct an investigation to observe cause and effect relationships? How do simple machines make work easier? How can we use patterns of change to predict an object's continued motion, change in motion, or stability?

Social and Emotional Learning: *Competencies*	Social and Emotional Learning: *Sub-Competencies*	How does force affect motion?

Self Awareness Self-Management Social Awareness Responsible-Decision Making Relationship Skills	● Recognize the importance of self-confidence in handling daily tasks and challenge ● Understand and practice strategies for managing one's own emotions, thoughts, and behaviors ● Recognize the skills needed to establish and achieve personal and educational goals ● Recognize and identify the thoughts, feelings, and perspectives of others ● Demonstrate an understanding of the need for mutual respect when viewpoints differ ● Develop, implement, and model effective problem-solving and critical thinking skills ● Identify the consequences associated with one's actions in order to make constructive choices ● Evaluate personal, ethical, safety, and civic impact of decisions ● Establish and maintain healthy relationships ● Utilize positive communication and social skills to interact effectively with others ● Identify ways to resist inappropriate social pressure ● Demonstrate the ability to prevent and resolve interpersonal conflicts in constructive ways	How can I use VEXcode GO with my robot? **Activity Description**: Students will explore the VEX GO Kits, in order to prepare them for safe, organized and effective use of the materials for future builds. Students will gain skills in building using beams and plates as well as explore the concept of stability and balance. Discuss how pieces are different just as people are different. Using the Engineering Design Process, students will design and build two spaceships, the first where the Astronaut is exposed and then a second where the Astronaut is enclosed. Students will learn to manipulate wheels, axles, and gears through the design and construction of a Mars Buggy vehicle. Students will create a model of the frog's natural habitat using the VEX GO Kit and classroom materials. Students will add other animals that naturally occur in the frog's habitat to the classroom model using the VEX GO Kit and classroom materials. Students will use the VEX GO Kit to build an Inclined Plane with 3 height levels and investigate how height and gravitational force affect the distance an object travels after rolling down an inclined plane. Explore how a lever can make work easier by reducing the amount of force needed to lift an object. Students will build a Spring Car with the GO Kit, and use the car to test how a wheel and axle makes work easier. Students will explore balanced and unbalanced forces by experimenting with the switches of the Super Cars by turning them on in succession or in a staggered sequence. Groups will combine builds and explore how multiple forces are needed in order for the car to turn. Students will build the Code Base and drive it using the Drive (remote control) mode in VEXcode GO. Students begin by talking about the concept of remote controls and how they are used in their everyday

	● Identify who, when, where, or how to seek help for oneself or others when needed	lives. Then they make the connection to using a remote control with a robot, and build the Code Base. Students will use the Code Base different sensors to self automate driving through different challenges including design thinking challenges to help those with disabilities. **Interdisciplinary Connections: Content:** NGSS: 3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3, 3-PS2-1, 3-PS2-2, 4-PS3-1, 4-PS3-4, 3-LS3-1, 3-LS3-2

Assessments (Formative) *To show evidence of meeting the standard/s, students will successfully engage within:*	Assessments (Summative) *To show evidence of meeting the standard/s, students will successfully complete:*
Formative Assessments: ● Exit Slips ● Quizzes ● Self Assessments/Reflection ● Lesson Activity Worksheets	**Benchmark:** ● Performance Assessment ● Unit Assessments **Summative Assessments:** ● District/Department Assessments

Differentiated Student Access to Content: Teaching and Learning *Resources/Materials*			
Core Resources	**Alternate Core Resources** *IEP/504/At-Risk/ESL*	**ELL Core Resources**	**Gifted & Talented Core Resources**
● http://youtube.com ● https://education.vex.com/	● Reteaching worksheets ● Spanish version of lesson activities	● Dictionary for native language	● Enrichment/Extension activities

Supplemental Resources

Technology:
- Chromebooks, MacBook
- Projector
- Smartboard
- Pens, Pencils, Paper
- VEX Go Kits

Other:
- Schoology
- GAFE (Docs, Sheets, Slides, Drawings, Sites)
- Recyclable Material
- YouTube

Differentiated Student Access to Content: Recommended *Strategies & Techniques*			
Core Resources	**Alternate Core Resources** *IEP/504/At-Risk/ESL*	**ELL Core Resources**	**Gifted & Talented Core**

● Deliver instruction utilizing varied learning styles including audio, visual, and tactile/kinesthetic, provide individual instruction as needed, modify assessments and/or rubrics, repeat instructions as needed.	● Special Education: Adhere to IEP/504s. Utilize a multi-sensory (VAKT) approach during instruction, provide alternate presentations of skills by varying the method (repetition, simple explanations, additional examples, modeling, etc.), modify test content and/or format, allow students to retake test for additional credit, provide additional times and preferential seating as needed, review, restate and repeat directions, provide study guides, and/or break assignments into segments of shorter tasks.	● Extend time requirements, preferred seating, positive reinforcement, check often for understanding/review, oral/visual directions/prompts when necessary, supplemental materials including use of online or paper bilingual dictionary, and modified assessment and/or rubric.	● Provide extension activities related to the topic being discussed. Create an enhanced set of introductory activities, integrate active teaching/learning opportunities, incorporate authentic components, propose interest-based extension activities, and connect students to related talent development opportunities.

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	**Disciplinary Concept:**	
	Core Ideas:	● **Collaboration with individuals with diverse perspectives can result in new ways of thinking and/or innovative solutions.** ● **Curiosity and a willingness to try new ideas (intellectual risk-taking) contributes to the development of creativity and innovation skills.** ● **The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills.** ● **Different digital tools have different purposes.** ● **Collaborating digitally as a team can often develop a better artifact than an individual working alone.**

	Performance Expectation/s:	9.4.5.CI.1, 9.4.5.CI.2, 9.4.5.CI.3, 9.4.5.CI.4, 9.4.5.CT.1, 9.4.5.CT.2,.4.5.CT.3, 9.4.5.CT.4, 9.4.5.TL.1, 9.4.5.TL.2, 9.4.5.TL.3, 9.4.5.TL.4.
	Career Readiness, Life Literacies, & Key Skills Practices	
	- Demonstrate creativity and innovation - Utilize critical thinking to make sense of problems and persevere in solving them - Plan education and career paths aligned to personal goals - Use technology to enhance productivity, increase collaboration and communicate effectively - Work productively in teams while using cultural/global competence	

New Jersey Legislative Statutes and Administrative Code
(place an "X" before each law/statute if/when present within the curriculum map)

	Amistad Law: *N.J.S.A. 18A 52:16A-88*		Holocaust Law: *N.J.S.A. 18A:35-28*	X	LGBT and Disabilities Law: *N.J.S.A. 18A:35-4.35*	X	Diversity & Inclusion: *N.J.S.A. 18A:35-4.36a*	X	Standards in Action: *Climate Change*