Seventh Grade Technology: Computer Science and Design Thinking Curriculum

Pacing Guide	Standard Code & Indicator	Sample Learning Activities	Assessment	Additional Standards

August September Networks and the Internet/Impacts of Computing	8.1.8.NI.3: Explain how network security depends on a combination of hardware, software, and practices that control access to data and systems. 8.1.8.NI.4: Explain how new security measures have been created in response to key malware events. 8.1.8.IC.1: Compare the trade-offs associated with computing technologies that affect an individual's everyday activities and career options. 8.1.8.IC.2: Describe issues of bias and accessibility in the design of existing technologies. 9.4.8.IML.9: Distinguish between ethical and unethical uses of information and media (e.g., 1.5.8.CR3b, 8.2.8.EC.2). 9.4.8.IML.10: Examine the consequences of the uses of media (e.g., RI.8.7). 9.4.8.IML.11: Predict the personal and community impact of online and social media activities.	-Discuss social media use/misuse and its potential consequences -Explore different aspects of cyber security -Demonstrate knowledge of a real world problem applying learned skills and using a chosen digital tool -Participate in Google Expeditions simulations -Use a simulation that provides an environment to solve a real world problem or theory **Instructional Resources:** Teacher Created Resources Newsela: https://newsela.com/assignment/ckt081j7700030e5nedycqgl2?utm_source=google-classroom&utm_campaign=share&utm_medium=web Cyberbullying: https://cyberbullying.org/bullying-laws/new-jersey **Teacher Technology:** Computer Activ Panel Acitiv View YouTube Videos	**Formative Assessments:** Classwork Student Participation Teacher Observation **Summative Assessments:** Google Expedition **Benchmark Assessment:** BOY Benchmark	**Interdisciplinary Standard: SL 7.1** Students will participate in discussions about cyber safety and social media use.

October- November Interaction of Technology and Humans	8.2.8.ITH.1: Explain how the development and use of technology influences economic, political, social, and cultural issues. 8.2.8.ITH.2: Compare how technologies have influenced society over time. 8.2.8.ITH.3: Evaluate the impact of sustainability on the development of a designed product or system. 8.2.8.ITH.4: Identify technologies that have been designed to reduce the negative consequences of other technologies and explain the change in impact. 8.2.8.ITH.5: Compare the impacts of a given technology on different societies, noting factors that may make a technology appropriate and sustainable in one society but not in another. 9.4.8.TL.5: Compare the process and effectiveness of synchronous collaboration and asynchronous collaboration 9.4.8.TL.6: Collaborate to develop and publish work that provides perspectives on a real-world problem.	-Learn about the environmental, economic, political, social, and cultural impact of cars/transportation -Design and Build an EV Car -Using Google apps, examine a world problem (social media, homelessness, hunger, etc.) -Assess research content done for accuracy -Research a global problem for an international audience -Create a presentation on a global issue **Instructional Resources:** Teacher Created Resources Drive It Green: https://docs.google.com/presentation/d/1lVSTeteaiYU346izRqENsRI7dJ5Cu8ck_GIw-QutuOE/edit#slide=id.p1 Battery Power: https://docs.google.com/presentation/d/1ocUqIKaw1IQ0yArc5gpASonAQDNhEAqb/edit#slide=id.p1 Aerodynamics: https://docs.google.com/presentation/d/1qm7BnFe7gEWPjWzetpDPYdnUxPzpe-xi/edit#slide=id.p1	**Formative Assessments:** Classwork Student Participation Teacher Observation **Summative Assessments:** Presentation of World issue EV Challenge	**Interdisciplinary Standard: R 7.1** Students will conduct research on a global issue

November-January Nature of Technology	8.2.8.NT.1: Examine a malfunctioning tool, product, or system and propose solutions to the problem. 8.2.8.NT.2: Analyze an existing technological product that has been repurposed for a different function. 8.2.8.NT.3: Examine a system, consider how each part relates to other parts, and redesign it for another purpose. 8.2.8.NT.4: Explain how a product designed for a specific demand was modified to meet a new demand and led to a new product. 9.4.8.GCA.2: Demonstrate openness to diverse ideas and perspectives through active discussions to achieve a group goal. 9.4.8.CI.2: Repurpose an existing resource in an innovative way.	-Understand what a product is and how its changed over time i.e. hot air balloons, EV Car Challenge -Research a project designed for a particular purpose -Evaluate a product and create a comprehensive time chart on its development - Identify how the product has had challenges and what was done to correct the problem -Explain how a product malfunctions and its impact -Evaluate the importance of resources used to make products: material, energy, time, tools, people -Analyze ethical issues based on intended and unintended consequences that come up with a product -Identify solutions to product problems i.e. creating a hot air balloon **Instructional Resources:** Teacher Created Resources Instructional guides to: toys, drones, rc cars, EV Car	**Formative Assessments:** Classwork Student Participation Teacher Observation **Summative Assessments:** Product Design Project	**Interdisciplinary Standard: SL 7.1b** Students will participate in discussions to provide feedback to peers on designed solutions and products

February -March Algorithms and Programming	8.1.8.AP.2: Create clearly named variables that represent different data types and perform operations on their values. 8.1.8.AP.3: Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals. 8.1.8.AP.4: Decompose problems and sub-problems into parts to facilitate the design, implementation, and review of programs. 8.1.8.AP.5: Create procedures with parameters to organize code and make it easier to reuse.	-Students will use code.org Computer Science Discoveries- animation and games/Design Process and App maker to learn application and development of codes -Students will use Sphero Education to create advanced programs using JavaScript -Apply a set of commands to a project -Gather peer feedback on designed solution and make changes accordingly **Instructional Resources:** appinventor.mit.edu Code.org Tynker familycodenight.org Snap Scratch **Teacher Technology:** Computer Activ Panel Acitiv View YouTube Videos GSuite Spheros **Student Technology:** Computer; iPads Google Classroom	**Formative Assessments:** Classwork Student Participation Teacher Observation **Summative Assessments:** Course progression Personal webpage	**Interdisciplinary Standard: Math** **7.RP.A.2** Coding uses sprites as a manipulative. When using a sprite in a space, students need to consider rations and proportional space.

April-June Algorithms and Programming/ Drones	8.1.8.AP.7: Design programs, incorporating existing code, media, and libraries, and give attribution. 8.1.8.AP.8: Systematically test and refine programs using a range of test cases and users. 8.1.8.AP.9: Document programs in order to make them easier to follow, test, and debug. 8.1.8.AP.6: Refine a solution that meets users' needs by incorporating feedback from team members and users.	-Students will do use drones to accomplish tasks using Java script or block coding -Develop an algorithm to solve an assigned problem -Explore drones -Design a drone obstacle course **Instructional Resources:** Drones Teacher Created Resources **Teacher Technology:** Computer Activ Panel Acitiv View YouTube Videos GSuite **Student Technology:** Computer; iPads Google Classroom Drones	**Formative Assessments:** Classwork Student Participation Teacher Observation **Summative Assessments:** Student Chosen Drone Assessment **Benchmark Assessment:** EOY Benchmark	**Interdisciplinary Standard:Math 7.G.B.5** In using drones students will have to operate the device in a 3 dimensional space and take into account angles and vertices in flight.

Alternate Assessments: Drone Obstacle Course, Global Issue Presentation**,** Worksheets/Activities
21st Century Standards: 9.2.8.B.3 9.2.8.B.7 and 9.2.8.B.4
21st Century Skills: Leadership, Creativity, Communication and Media Literacy
Career Ready Practices: CRP 2, CRP 4, CRP 6 and CRP 10