Standard: Technology Literacy (2009)

8.1: Education Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

8.2: Technology Education, Engineering, and Design: All students will develop an understanding of the nature and impact of technology, engineering, technology design, and the designed world, as they relate to the individual, global, and the environment.

9.1: 21st Century Life and Career Skills: All students will demonstrate the creativity, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

Strand:

8.1.A: Technology Operations and Concepts
8.1.F: Critical Thinking, Problem Solving, and Decision Making

8.2.B: Design: Critical Thinking, Problem Solving, and Decision Making
8.2.F: Resources for a Technological World
8.2.G: The Designed World

9.1.A: Critical Thinking and Problem Solving
9.2.E: Communication and Media Fluency
9.2.F: Accountability, Productivity, and Ethics

Curriculum aligned with: 2009 New Jersey Core Curriculum Content Standards for 21st Century Skills (9.1 A-F)

21st Century Theme: *Global Awareness ☐,Financial, economic, business and entrepreneurial literacy X,Civic literacy ☐,Health literacy ☐Environmental Literacy ☐*

21st Century Skills: *Critical Thinking & Problem Solving ☐,Creativity and Innovation ☐,Collaboration, Teamwork and Leadership ☐,Cross-Cultural Understanding and Interpersonal Communications ☐ Communication and Media Fluency X,Accountability, Productivity and Ethics ☐*

Interdisciplinary Connection: Math=MA, English=ELA, Science=SCI, Social Studies=SS, Physical Education=PE, Art=ART, Music=MU, Technology=TECH, World Language=WL Business = BU

Essential Questions	Enduring Understandings	Activities, Investigation, and Student Experiences
● When did computers come in to existence and evolve into what they are today? ● What are the major components of modern computers? ● How is data stored within the memory of a computer? ● What occurred along the three-generation development of programming languages? ● What are the advantages to object oriented programming?	*Students will understand….* ● How personal computers became such a significant part of society today ● The defining differences between the hardware and software components of modern computers ● How to represent numbers and information in binary form ● Object-oriented programming can lead to better-quality software.	● Task 1: Take some time to become familiar with the architecture of the computer you will use for this course. Describe your hardware and software using the following guidelines: -What hardware components make up your system? -How much memory does your system have? -What are the specifications of your CPU? (Do you know its speed and what kind of microprocessor it has?) -What operating system are you using? What version of that operating system is your computer currently running? -What major software applications are loaded on your system? ● Task 2: You have just written some software, that you would like to sell. Your friend suggests that you copyright the software. Discuss why this might be a good idea. ● Task 3: Assume that 4 bits are used to represent the intensities of red, green, and blue. How many total colors are possible in the scheme? TECH **Unit Project:** Each student will choose a field related to computer science and do the following

Content Statements	**Cumulative Progress Indicators**
Students will know… ● **A brief history of computers** ● **How hardware and software make up computer architecture** ● **Interpret the binary representation of data and programs in computers** ● **Evolution of programming languages over the years** ● **The steps of the software development process** ● **Fundamental concepts and advantages of object-oriented programming**	● Tests ● Quizzes ● Practice problems for homework ● Worksheets ● Projects
Desired Results	
● Understand the history of computers ● Distinguish between computer hardware and software ● Recognize steps of the software development process ● Understand purpose and advantages of object	

oriented programming	
Standards for Mathematical Practices	Teacher Resources
1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.	http://www.cengage.com/us http://achievethecore.org https://learnzillion.com https://www.khanacademy.org/ https://www.desmos.com/ http://www.ixl.com http://www.parcconline.org

LGBT and Disabilities Law: *N.J.S.A. 18A:35-4.35*

Stephen Hawking https://computer.howstuffworks.com/audeo.htm
https://www.mathtutordvd.com/public/Who-is-Stephen-Hawking-What-did-He-Discover.cfm
https://www.nasa.gov/centers/ames/news/releases/2004/subvocal/subvocal.html
https://spacemath.gsfc.nasa.gov/weekly/6Page46.pdf

The mission is to ensure that every student is able to see themselves in our rich and diverse history.

Social and Emotional Learning: ***Competencies***	**Social and Emotional Learning:** ***Sub-Competencies***
Self-Awareness Social Awareness Self-Management Relationship Skills Responsible Decision-Making	• Recognizing the importance of self-confidence in handling daily tasks and challenges. • Demonstrate an awareness of the expectations for social interactions in a variety of ways. • Demonstrate an understanding of the need for mutual respect when viewpoints differ. • Recognize the skills needed to establish and achieve personal and educational goals. • Utilize positive communication and social skills to interact effectively with others. • Develop, implement, and model effective problem solving and critical thinking skills.