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 ☐ Civic literacy ☐,Health literacy ☐Environmental Literacy X*

21st Century Skills: *Critical Thinking & Problem Solving ☐,Creativity and Innovation ☐,Collaboration, Teamwork and Leadership ☐,Cross-Cultural Understanding and Interpersonal Communications X Communication and Media Fluency ☐, 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**
• How to search arrays? • How to sort arrays? • What are bubble sorts? • What are Selection sorts? • What are Insertion sorts? • What are sequential searches? • What are Binary searches? • What are inheritance? • What is an abstract Board class?	*Students will understand….* • Searching and Sorting arrays • The array list class • The array list methods • The difference between the searches • The difference between the sorts • The basics of game design and development • How to experiment with a large program • How to use an abstract Board class.	• Lab 1: Students will create their own utility class that includes all of the sorts and searches they learned in this unit. • Lab 2: Students will use their utility class to create a program that will allow an accountant to sort their accounts anyway they want. Students will be given a set of data to use. • Lab 3: Students will create a program that will show a deck of cards: “Cards” • Lab 4: Students will create a program that will allow the program “Cards” be able to shuffle cards. **Spot Light On:** *Acknowledge every student’s comment or response, even if it’s incorrect.* **<u>Unit Project:</u>** • Lab 5: Students will use “Cards” to create a simple card game. **Modifications and/or Accommodations:** • **Special Education:** Utilize a multi-sensory (VAKT) approach during instruction, provide alternate presentations of skills by varying the method (repetition, simple
Content Statements	**Cumulative Progress Indicators**	

Students will know…

- The string class
- The string method
- Arrays
- Arraylist method
- Arraylist class
- One-dimensional arrays
- 2-D arrays
- Simple inheritance and interfaces
- Class diagrams
- Modify classes
- Inheritance
- Experiment with large programs
- Design a class that models a deck of cards
- Analyze and discuss the efficiency of shuffling algorithms
- Extend an abstract board class

- Tests
- Quizzes
- Practice problems for homework
- Projects
- Worksheets
- In-class programs
- Labs

Desired Results

- Write a method for searching an array
- Perform insertions and deletions at given positions in arrays
- Trace through sorting and searching algorithms and understand time constraints of each

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.

- **English Language Learners:** Extend time requirements, preferred seating, positive reinforcement, check often for understanding/review, oral/visual directions/prompts when necessary, supplemental materials including use of online bilingual dictionary, and modified assessment and/or rubric.
- **Students at Risk of School Failure:** 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.

Gifted Students: Create an enhanced set of introductory activities, integrate active teaching/learning opportunities, incorporate authentic components, propose interest-based extension activities, and connect student to related talent development opportunities.

● Understand the algorithms behind each of the following searching and sorting techniques: bubble, selection, and insertion sorts; sequential search and binary search ● Understand the time efficiency of each sort and search and when it is desirable to use each one ● Identify reusable components from existing code using classes and class libraries ● Given different scenarios, students should be able to choose the most appropriate sort or search ● Students will be able to start creating a game from scratch ● Students will be able to write a program that will produce a deck of cards	
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

Social and Emotional Learning: ***Competencies***	
SEL 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. • Identify and apply ways to persevere through alternative methods to achieve goals. • Utilize positive communication and social skills to interact effectively with others. •Develop, implement, and model effective problem solving and critical thinking skills.

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*		LGBT and Disabilities Law: *N.J.S.A. 18A:35-4.35*	**x**	Diversity & Inclusion: *N.J.S.A. 18A:35-4.36a*		Standards in Action: *Climate Change*