Grand Island Central School District Curriculum Map <Computer Programming Grades 9-12>

Units of Study (Duration)	NYS Standards	Common Core Standards	Vocabulary Content Process	Essential/Guiding Questions	Essential Skills	Assessment(s)	Resources Texts Tech Integration
2-3 days				What is the history of computers?			
1 week	Information technology can have positive and negative impacts on society, depending upon how it is used *(standard 5)	CI.L2-02 Demonstrate knowledge of changes in information technologies over time and the effects those changes have on education, the workplace, and society. CI.L2-03 Analyze the positive and negative impacts of computing on human culture.		How have electronic devices in the last 10 years affected society?	Research Use of Internet PowerPoint Public speaking presentation	PowerPoint presentation that give history, timeline, societal effects, life without	Computers Internet access PowerPoint
1.5 weeks		CL.L3A-01 Work in a team to design and develop an artifact Demonstrate Proficiency in the Use of computers And applications As well as an understanding of the concepts underlying the hardware, software and connectivity	CPU Memory Peripherals	What makes up a computer system? Internal and external components	Research Use of Internet Budget constraints Working with a partner Decision making	Poster Focal point Computer System components	Computer Internet Access Color printer
1 week	Knowledge of the impacts and limitations of information sys-	Demonstrate the responsible use of technology and an understanding of ethics and safety issues in using	Viruses Spam	What is Ethic Computing?			

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	tems is essential to its effective and ethical use*(standard 5)	electronic media at home, in school and in society.					
3 weeks	`		Variables Control Structures Data Structures Syntax Tools	What vocabulary do I need to be successful programming; What are the simple ideas that make up programming?		Vocabulary worksheet	Computer Internet Infocus projector
				Who is James Gosling?		Teacher Observation Completed Projects Rubrics	You-tube Video Computer Infocus projector
				Why was Java invented?		Teacher Observation Completed Projects Rubrics	Computer Infocus projector
				What is Polymorphism, encapsulation and inheritance; how does it relate to program-		Teacher Observation Completed Projects Rubrics	Computer Infocus projector

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				ming in Java.			
		Develop methods for creating possible solutions, modeling and testing solutions, and modifying proposed design in the solution of a technological problem using hands-on activities.	IDE, 3-D, degrees of freedom, classes, instantiation, objects, orientation	How does Alice fit into Learning to program in Java How do you use Alice? What makes it an IDE? What are classes and object as they relate to Alice? What do you need to know about Objects, orientation, center points and movement?		Knowledge retention activity	Computer and Alice Infocus projector
2 days						Notes	Computer Infocus projector
Multiple weeks						Notes and teacher observation, modeled to students Activity in Alice	Computer and Alice Infocus projector
1 week			Criticism, constructive criticism, ideas, brainstorming	Importance of working on a team	Understand importance of working together to problem solve	Teacher Observation Completed Projects Rubrics	Computer/infocus
2 weeks	Standard 2: Students will access, generate, process, and transfer information us-	Develop methods for creating possible solutions, modeling and testing solutions, and modifying proposed design in the solu-	String, Integer and Double Data types, primitive, while loop	Variables, Functions and User Input Control loops – while	Identify the appropriate variable type and how to use	Teacher Observation Completed Projects Rubrics	Computer/infocus

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	ing appropriate technologies	tion of a technological problem using hands-on activities.		Play again scenario Parameters and making your own function			
1 week	Standard 2: Students will access, generate, process, and transfer information using appropriate technologies		Iteration, accumulation, incrementing, decrementing, for loops, do while		How to use iteration to repeat a game	Quizzes, projects	Computer/infocus
1 week	Standard 2: Students will access, generate, process, and transfer information using appropriate technologies				How to pass arguments for use in a method	projects	Computer/infocus
1-2 week	Standard 2: Students will access, generate, process, and transfer information using appropriate technologies	6. Technology problem-solving and decision-making tools Students use technology resources for solving problems and making informed decisions. Students employ technology in the development of strategies for solving problems in the real		Game making objectives	Rules and conditions of a game	Notes/projects	Computer/infocus

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		world.					
1 week	Standard 2: Students will access, generate, process, and transfer information using appropriate technologies	CC.6-8.R.ST.3 Key Ideas and Details: Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	If statements, formatting, semicolons, relationship logical operators	Decision Structures	How to follow logical sequencing for using conditionals	Notes/projects/ worksheets	Computer/infocus
1-3 days	Standard 2: Students will access, generate, process, and transfer information using appropriate technologies	CC.6-8.R.ST.3 Key Ideas and Details: Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	Movement Sprites Costumes	Introduction to Scratch		Teacher Observation Completed Projects Rubrics	Computer/infocus
		CC.6-8.R.ST.3 Key Ideas and Details: Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	Coordinates Backgrounds Sound Hats Blocks	How Scratch is coded	Working with puzzle pieces to code	Teacher Observation Completed Projects Rubrics	Computer/infocus
1-3 weeks	Standard 2: Students will access, generate, process, and transfer information us-	6. Technology problem-solving and decision-making tools Students use technology	Rules Playing	Game Development using Scratch	Using prior programming knowledge to develop	Teacher Observation Completed Projects Rubrics	Computer/infocus

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	ing appropriate technologies	resources for solving problems and making informed decisions. Students employ technology in the development of strategies for solving problems in the real world.			simple games		
2-3 days	Standard 2: Students will access, generate, process, and transfer information using appropriate technologies	CC.6-8.R.ST.3 Key Ideas and Details: Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	Syntax Logic Sequential Random	Introduction to Java		Teacher Observation Completed Projects Rubrics	Computer/infocus
1 week	Standard 2: Students will access, generate, process, and transfer information using appropriate technologies	CC.6-8.R.ST.3 Key Ideas and Details: Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	Semicolons Curly braces Keywords Pseudocode Code flow Source code Byte code binary	Syntax of Java	Writing code	Teacher Observation Completed Projects Rubrics	Computer/infocus
1 -2 weeks	Standard 2: Students will access, generate, process, and transfer	CC.6-8.R.ST.3 Key Ideas and Details: Follow precisely a multistep procedure when carrying out	Prompt text	Console programming	Programming with text based user inter-	Teacher Observation Completed Projects	Computer/infocus

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	information using appropriate technologies	experiments, taking measurements, or performing technical tasks.			face	Rubrics	
2-3 days	Standard 2: Students will access, generate, process, and transfer information using appropriate technologies	CC.6-8.R.ST.3 Key Ideas and Details: Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	Awt Input boxes Dialog boxes	Swing code	Programming GUI for user interface	Teacher Observation Completed Projects Rubrics	Computer/infocus
1 week	Standard 2: Students will access, generate, process, and transfer information using appropriate technologies	CC.6-8.R.ST.3 Key Ideas and Details: Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	Listeners	Applets	Programming for web applications	Teacher Observation Completed Projects Rubrics	Computer/infocus
2-3 days	Standard 2: Students will access, generate, process, and transfer information using appropriate technologies	CC.6-8.R.ST.3 Key Ideas and Details: Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.		How is Java different or the same to JavaScript	Writing code in a webpage	Teacher Observation Completed Projects Rubrics	Computer/infocus
1 week				review		Teacher Observation Completed Pro-	Computer/infocus

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						jects Rubrics	