The UbD Template, Version 2.0

<table>
<tr><td>Time Frame: 5 Weeks</td><td>Unit Title: Algorithms and Programming</td><td>Course Name: Technology and Society</td></tr>
<tr><td colspan="3">Stage 1 - Desired Results</td></tr>
<tr><td rowspan="6">Established Goals

NH Computer Science Standards

Algorithms and Programming

● 1B-AP-15 Test and debug (identify and fix errors) a program or algorithm to ensure it runs as intended.
● 2-AP-11 Create clearly named variables that represent different data types and perform operations on their values.
● 2-AP-13 - Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs.</td><td colspan="2">Transfer</td></tr>
<tr><td colspan="2">Students will be able to independently use their learning to…

creatively solve problems by coding software applications.</td></tr>
<tr><td colspan="2">Meaning</td></tr>
<tr><td>UNDERSTANDINGS
Students will understand that….

● Programs are lists of instructions, in a very specific syntax, that are executed by computers.
● Programs can be used to develop a wide array of solutions to complex problems.
● Complex problems can be solved by breaking them into smaller subproblems that can be solved more easily.</td><td>ESSENTIAL QUESTIONS
Students will keep considering

● How does programming enable creativity and individual expression?
● What practices and strategies will help me as I write programs?</td></tr>
<tr><td colspan="2">Acquisition</td></tr>
<tr><td>Students will know…

● that Python is one of many programming languages.
● That programming solutions use an array of computer science techniques such as loops, conditionals, variables and functions.</td><td>Students will be skilled at…

● Breaking down complex problems into smaller components that can be solved more easily.
● Developing Python programs to draw images on a computer canvas.</td></tr>
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• *2-AP-14: Create procedures with parameters to organize code and make it easier to reuse.* • *2-AP-17 - Systematically test and refine programs using a range of test cases.* • *2-AP-19 - Document programs in order to make them easier to follow, test, and debug.* • *3A-AP-16 Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue by using events to initiate instructions.* • *3A-AP-18: Create artifacts by using procedures within a program, combinations of data and procedures, or independent but*		• *Reducing code repetition through the use of loops.* • *Reusing code through the use of functions and parameters.* • *Developing programs that make decisions through the use of if/else statements.*

interrelated programs. **Content Area Literacy Standards** ● *RST.9-10.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.* ● *RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.* ● *RST.11-12.4 Determine the meaning of symbols, key terms, and other*		

domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics. ● *RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.* ● *WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.*		

21st Century Skills ● *Reason Effectively* ● *Access and Evaluate Information* ● *Be Self-directed Learners* ● *Solve Problems*		