Mount Pleasant Central School District

AP Computer Science Principles, STEM

We believe students should have a rich, well-balanced technology environment to maximize their learning. Our vision is to provide students with real-world opportunities in technology. We are committed to developing creative thinkers, effective communicators, collaborators, problem solvers and students who can critically evaluate information and media.

AP Computer Science A is a college-level course that introduces students to fundamental programming concepts using the Java language. It focuses on problem-solving, algorithm development, and writing programs that are efficient and well-structured. Students learn about data structures like arrays and lists, object-oriented programming principles including classes and inheritance, and how to design and test software. This course prepares students for the AP exam and builds strong computational thinking skills that are valuable for college and future careers in technology.

Unit Title	Month	Content	Vocabulary	Standards	Skills	Big Ideas	Assessments
Computational Thinking	Summer	Variables and Data Types, Expressions and Operators	Variable, Data Type, Operator, Casting, Modular Division	Write program code to implement an algorithm. (CBAPCSA-2.A)	Develop code, interpret code	Students will be able to write programs that use variables and basic mathematical operations to manipulate data and solve computational problems.	Test in style of AP Exam
Programming	September	Creating and Calling Objects, Object References and Constructors	Object, Class, Constructor, Method, Reference	Describe the behavior of a code segment or program. (CBAPCSA-4.A)	Analyze code with object references	Students will be able to differentiate between primitive data types and objects, creating and using objects to store and manipulate more complex data types through method calls.	Test in style of AP Exam
Data Representation	October	Boolean Expressions and Relational Operators, Conditional Logic with If Statements	Boolean, Relational Operator, Logical Operator, Selection	Determine the result or output based on code that contains procedural abstractions. (CBAPCSA-3.C)	Implement algorithms, trace code execution	Students will be able to write programs that make logical decisions by using Boolean expressions and conditional statements,	Test in style of AP Exam

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						enabling the program to respond appropriately to different inputs and conditions.	
Digital Media Processing	January	While/For Loops and Nested Iteration	Iteration, Loop, Infinite Loop, Counter Variable, Nested Loop	Determine the result or output based on statement execution order in an algorithm. (CBAPCSA-3.A)	Create boolean expressions with counters to execute code inside of loops	Students will be able to write programs that use different types of loops to repeat code, allowing them to process large amounts of data and solve complex problems efficiently.	Test in style of AP Exam
Big Data	February	Anatomy of a Class, Constructors and Methods	Parameter, Primitive, Constructor, Static/Instance, Sub/Superclass	Determine an appropriate program design to solve a problem or accomplish a task. (CBAPCSA-1.A)	Design and implement a new class with instance variables, constructors, and methods	Students will be able to design and implement their own classes, defining both the data (attributes) and functionality (behaviors) for custom objects.	Test in style of AP Exam

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Innovative Technologies	March	Declare/Initialize One-Dimensional Arrays, Enhanced Loops to Traverse Arrays	Array, Element, Index, Traversal, Enhanced For Loop	Write program code involving data abstractions. (CBAPCSA-2.B)	Data processing with the use of arrays and iteration & Construct, access and manipulate arrays	Students will be able to use arrays to manage and process collections of related data efficiently, applying iteration and algorithms to solve complex problems.	Test in style of AP Exam
AP Create Task	April					Students will use class time to create a project on Scratch and Python to meet requirements for the college board.	Create Task submitted on digital portfolio that amounts to 30% of AP Exam Score
Real Life Applications Project	May					Students will complete a project applying knowledge culminated throughout the year.	Project completed using skills learned throughout the year.
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