AP Computer Science Coverage
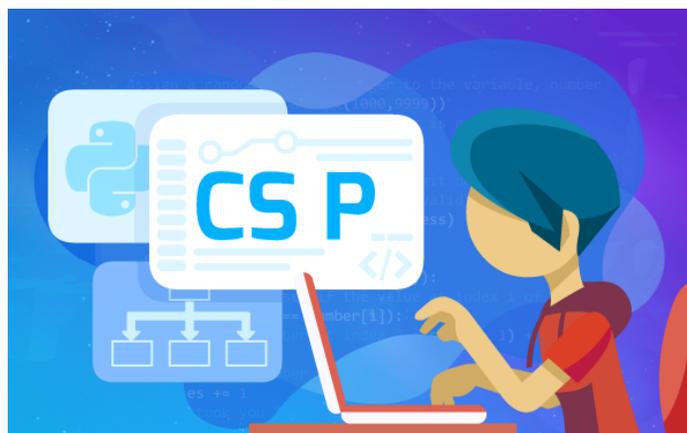

AP Computer Science A		
Learning Objective	**Description**	**Lessons**
MOD-1	Some objects or concepts are so frequently represented that programmers can draw upon existing code that has already been tested, enabling them to write solutions more quickly and with a greater degree of confidence.	1.4, 1.6, 1.9 2.2-2.5, 2.11 2.13 4.16 5.1, 5.11
MOD-2	Programmers use code to represent a physical object or nonphysical concept, real or imagined, by defining a class based on the attributes and/or behaviors of the object or concept.	2.1-2.5 2.13 5.1-5.5, 5.7-5.9 5.11-5.12 7.12
MOD-3	When multiple classes contain common attributes and behaviors, programmers create a new class containing the shared attributes and behaviors forming a hierarchy. Modifications made at the highest level of the hierarchy apply to the subclasses.	5.6-5.7 9.1-9.7

VAR-1	To find specific solutions to generalizable problems, programmers include variables in their code so that the same algorithm runs using different input values.	1.5, 1.15-1.17 1.8-1.10 2.7-2.10 2.12-2.13 4.16 5.2 7.12
VAR-2	To manage large amounts of data or complex relationships in data, programmers write code that groups the data together into a single data structure without creating individual variables for each value.	6.1-6.3, 6.5-6.8 6.11-6.12, 6.18-6.19 7.1-7.4, 7.10 8.1-8.8
CON-1	The way variables and operators are sequenced and combined in an expression determines the computed result.	1.14, 1.17-1.18 2.11 3.1-3.3, 3.5-3.7 4.5
CON-2	Programmers incorporate iteration and selection into code as a way of providing instructions for the computer to process each of the many possible input values.	3.4-3.5, 3.7 4.1-4.4, 4.6-4.16 6.4-6.5, 6.16-6.17 7.5-7.11 8.8 10.1-10.8
IOC-1	While programs are typically designed to achieve a specific purpose, they may have unintended consequences.	4.16 5.10 7.9 7.10 7.12

AP Computer Science A

Essential Skill	Description	Units
Program Design and Algorithm Development [1]	Determine required code segments to produce a given output.	1-10
Code Logic [2]	Determine the output, value, or result of given program code given initial values.	1-10
Code Implementation [3]	Write and implement program code.	1-10
Code Testing [4]	Analyze program code for correctness, equivalence, and errors.	1-10
Documentation [5]	Describe the behavior and conditions that produce identified results in a program.	1-10

AP Computer Science Principles		
Learning Objective	**Description**	**Lessons**
CRD-1	Incorporating multiple perspectives through collaboration improves computing innovations as they are developed.	1.10
CRD-2	Developers create and innovate using an iterative design process that is user focused, that incorporates implementation/feedback cycles, and that leaves ample room for experimentation and risk-taking.	1.2, 1.4, 1.5 2.6, 2.8 2.10-2.11 3.5 4.4 4.8-4.9 5.9 6.1 7.7, 8.7
DAT-1	The way a computer represents data internally is different from the way the data are interpreted and displayed for the user. Programs are used to translate data into a representation more easily understood by people	3.1, 3.4 10.6

DAT-2	Programs can be used to process data, which allows users to discover information and create new knowledge.	4.2 7.3-7.5 8.8, 8.10
AAP-1	To find specific solutions to generalizable problems, programmers represent and organize data in multiple ways.	1.4 2.4, 2.5 3.2-3.3 5.3 6.1 8.3 8.4
AAP-2	The way statements are sequenced and combined in a program determines the computed result. Programs incorporate iteration and selection constructs to represent repetition and make decisions to handle varied input values.	1.3, 1.5 1.6-1.7 2.1-2.3 2.5, 2.9 2.10 3.2, 3.4 4.7 5.1-5.2 5.4, 5.6 5.8, 6.1 7.1-7.2 7.6 8.2-8.3 8.6 10.1-10.2
AAP-3	Programmers break down problems into smaller and more manageable pieces. By creating procedures and leveraging parameters, programmers generalize processes that can be reused. Procedures allow programmers to draw upon existing code that has	2.7 3.4, 3.6 5.3 5.5 5.7

	already been tested, allowing them to write programs more quickly and with more confidence.	6.1 8.7, 8.9 10.2 12.1-12.4
AAP-4	There exist problems that computers cannot solve, and even when a computer can solve a problem, it may not be able to do so in a reasonable amount of time.	10.3-10.5
CSN-1	Computer systems and networks facilitate the transfer of data.	1.8 4.1 4.3
CSN-2	Parallel and distributed computing leverage multiple computers to more quickly solve complex problems or process large data sets.	4.5-4.6
IOC-1	While computing innovations are typically designed to achieve a specific purpose, they may have unintended consequences.	1.1, 1.9 8.1, 8.5 8.7 10.7 12.7
IOC-2	The use of computing innovations may involve risks to personal safety and identity.	12.7

AP Computer Science Principles

Essential Skill	Description	Units
Computational Solution Design [1]	Design and evaluate computational solutions for a purpose.	1-12
Algorithms and Program Development [2]	Develop and implement algorithms.	1-12
Abstraction in Program Development [3]	Develop programs that incorporate abstractions.	1-8, 10
Code Analysis [4]	Evaluate and test algorithms and programs.	1-12
Computing Innovations [5]	Investigate computing innovations.	1, 8, 10, 12
Reasonable Computing [6]	Contribute to an inclusive, safe, collaborative, and ethical computing culture.	1-12