Course at a Glance

Plan

The Course at a Glance provides a useful visual organization of the AP Computer Science A curricular components, including the following:

- Sequence of units, along with approximate weighting and suggested pacing. Please note, pacing is based on 45-minute class periods, meeting five days each week for a full academic year.
- Progression of topics within each unit.
- Spiraling of the big ideas and practices across units.

Teach

COMPUTATIONAL THINKING PRACTICES
Practices spiral across units.

1 Program Design and Algorithm Development	**3** Code Implementation
2 Code Logic	**4** Code Testing
	5 Documentation

+ Indicates 3 or more skills/practices suggested for a given topic. The individual topic page will show all the suggested skills.

BIG IDEAS
Big ideas spiral across units.

MOD Modularity		**CON** Control	
VAR Variables		**IOC** Impact of Computing	

Assess

Assign the Personal Progress Checks—either as homework or in class—for each unit. Each Personal Progress Check contains formative multiple-choice questions and formative free-response questions that are written in a similar style to what students will experience on the end-of-year exam. Feedback from the Personal Progress Checks shows students the areas on which they need to focus.

UNIT 1 — Primitive Types

~8–10 Class Periods   2.5–5% AP Exam Weighting

MOD VAR 2 4	**1.1** Why Programming? Why Java?
VAR 1	**1.2** Variables and Data Types
CON 1 2	**1.3** Expressions and Assignment Statements
CON 2 5	**1.4** Compound Assignment Operators
CON 2 5	**1.5** Casting and Ranges of Variables

Personal Progress Check 1

Multiple-choice: ~25 questions

UNIT 2 — Using Objects

~13–15 Class Periods   5–7.5% AP Exam Weighting

MOD 5	**2.1** Objects: Instances of Classes
MOD VAR 1 3	**2.2** Creating and Storing Objects (Instantiation)
MOD 1 3	**2.3** Calling a Void Method
MOD 2 3	**2.4** Calling a Void Method with Parameters
MOD 1 3	**2.5** Calling a Non-void Method
VAR 2	**2.6** String Objects: Concatenation, Literals, and More
VAR 2 3	**2.7** String Methods
VAR 2	**2.8** Wrapper Classes: Integer and Double
MOD CON 1 3	**2.9** Using the Math Class

Personal Progress Check 2

Multiple-choice: ~25 questions
Free-response: 1 question
- Methods and Control Structures: partial

NOTE: Partial versions of the free-response questions are provided to prepare students for more complex, full questions that they will encounter on the AP Exam.

UNIT 3 — Boolean Expressions and `if` Statements

~11–13 Class Periods | **15–17.5%** AP Exam Weighting

CON 2	**3.1**	Boolean Expressions
CON 2 3	**3.2**	`if` Statements and Control Flow
CON 3 4	**3.3**	`if-else` Statements
CON 3 4	**3.4**	`else if` Statements
CON 2 3	**3.5**	Compound Boolean Expressions
CON 4	**3.6**	Equivalent Boolean Expressions
CON 2 3	**3.7**	Comparing Objects

Personal Progress Check 3

Multiple-choice: ~20 questions
Free-response: 2 questions
- Methods and Control Structures
- Methods and Control Structures: partial

UNIT 4 — Iteration

~14–16 Class Periods | **17.5–22.5%** AP Exam Weighting

CON +	**4.1**	`while` Loops
CON +	**4.2**	`for` Loops
CON 2 3	**4.3**	Developing Algorithms Using Strings
CON +	**4.4**	Nested Iteration
CON 2	**4.5**	Informal Code Analysis

Personal Progress Check 4

Multiple-choice: ~15 questions
Free-response: 2 questions
- Methods and Control Structures
- Methods and Control Structures: partial

UNIT 5 — Writing Classes

~12–14 Class Periods | **5–7.5%** AP Exam Weighting

MOD 1	**5.1**	Anatomy of a Class
MOD 1 3	**5.2**	Constructors
MOD 5	**5.3**	Documentation with Comments
MOD 3 5	**5.4**	Accessor Methods
MOD 3 4	**5.5**	Mutator Methods
MOD 1 3	**5.6**	Writing Methods
MOD 3 5	**5.7**	Static Variables and Methods
VAR 3 5	**5.8**	Scope and Access
VAR 2	**5.9**	`this` Keyword
IOC N/A	**5.10**	Ethical and Social Implications of Computing Systems

Personal Progress Check 5

Multiple-choice: ~25 questions
Free-response: 2 questions
- Class
- Class: partial

UNIT 6 — Array

~6–8 Class Periods	10–15% AP Exam Weighting

VAR 1 3 **6.1** Array Creation and Access

VAR + **6.2** Traversing Arrays

VAR 3 4 **6.3** Enhanced for Loop for Arrays

CON + **6.4** Developing Algorithms Using Arrays

UNIT 7 — ArrayList

~10–12 Class Periods	2.5–7.5% AP Exam Weighting

VAR 1 3 **7.1** Introduction to ArrayList

VAR 2 3 **7.2** ArrayList Methods

VAR 2 3 **7.3** Traversing ArrayLists

CON 3 4 **7.4** Developing Algorithms Using ArrayLists

CON 3 5 **7.5** Searching

CON 2 **7.6** Sorting

IOC N/A **7.7** Ethical Issues Around Data Collection

UNIT 8 — 2D Array

~10–12 Class Periods	7.5–10% AP Exam Weighting

VAR 1 3 **8.1** 2D Arrays

VAR CON + **8.2** Traversing 2D Arrays

Personal Progress Check 6

Multiple-choice: ~15 questions
Free-response: 2 questions
- Array and ArrayList (Array only)
- Array and ArrayList (Array only): partial

Personal Progress Check 7

Multiple-choice: ~15 questions
Free-response: 1 question
- Array and ArrayList (ArrayList focus)

Personal Progress Check 8

Multiple-choice: ~10 questions
Free-response: 1 question
- 2D Array

UNIT 9 — Inheritance

~13–15 Class Periods | **5–10%** AP Exam Weighting

MOD 1 3	9.1	Creating Superclasses and Subclasses
MOD 3 5	9.2	Writing Constructors for Subclasses
MOD 3 5	9.3	Overriding Methods
MOD 1 3	9.4	super Keyword
MOD 3 5	9.5	Creating References Using Inheritance Hierarchies
MOD 3 5	9.6	Polymorphism
MOD 1 3	9.7	Object Superclass

UNIT 10 — Recursion

~3–5 Class Periods | **5–7.5%** AP Exam Weighting

| CON 1 5 | 10.1 | Recursion |
| CON 2 | 10.2 | Recursive Searching and Sorting |

Personal Progress Check 9

Multiple-choice: ~15 questions
Free-response: 2 questions
- Class
- Class: partial

Personal Progress Check 10

Multiple-choice: ~10 questions
Free-response: 1 question
- Methods and Control Structures (recursive and non-recursive solutions allowed)