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
- 2 Code Logic
- 3 Code Implementation
- 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
- VAR Variables
- CON Control
- 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

Personal Progress Check 6

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

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

Personal Progress Check 7

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

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 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

Personal Progress Check 9

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

- Class
- Class: partial

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 10

Multiple-choice: ~10 questions
Free-response: 1 question

- Methods and Control Structures (recursive and non-recursive solutions allowed)