Course at a Glance

Plan

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

- 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.
- Computational thinking practices across units.

Teach

COMPUTATIONAL THINKING PRACTICES

- 1 Design Code
- 2 Develop Code
- 3 Analyze Code
- 4 Document Code and Computing Systems
- 5 Use Computers Responsibly

Required Course Content

Each topic contains required learning objectives and essential knowledge statements that form the basis of the assessment on the AP Exam.

Assess

Assign the Progress Checks—either as homework or in class—for each unit. Each Progress Check contains formative multiple-choice and free-response questions. The feedback from the Progress Checks shows students the areas where they need to focus.

UNIT 1 Using Objects and Methods

~32–34 Class Periods | **15–25%** AP Exam Weighting

1	1.1 Introduction to Algorithms, Programming, and Compilers
1 2	1.2 Variables and Data Types
2 3	1.3 Expressions and Output
2 4	1.4 Assignment Statements and Input
2 4	1.5 Casting and Range of Variables
3	1.6 Compound Assignment Operators
4	1.7 Application Program Interface (API) and Libraries
4	1.8 Documentation with Comments
3	1.9 Method Signatures
2 3	1.10 Calling Class Methods
2 4	1.11 `Math` Class
4	1.12 Objects: Instances of Classes
2	1.13 Object Creation and Storage (Instantiation)
2 3	1.14 Calling Instance Methods
2 3 4	1.15 `String` Manipulation

Progress Check Unit 1 Part 1: Topics 1.1–1.4

Multiple-choice: ~12 questions

Progress Check Unit 1 Part 2: Topics 1.5–1.9

Multiple-choice: ~15 questions

Progress Check Unit 1 Part 3: Topics 1.10–1.15

Multiple-choice: ~18 questions
Free-response: 1 question
- Methods and Control Structures (partial)

UNIT 2 Selection and Iteration

~29–31 Class Periods | **25–35%** AP Exam Weighting

1	2.1 Algorithms with Selection and Repetition
3	2.2 Boolean Expressions
2 3 4	2.3 `if` Statements
2 4	2.4 Nested `if` Statements
2 3	2.5 Compound Boolean Expressions
2 3	2.6 Comparing Boolean Expressions
2 3 4	2.7 `while` Loops
2 3	2.8 `for` Loops
2 3 4	2.9 Implementing Selection and Iteration Algorithms
2 3	2.10 Implementing String Algorithms
2 3 4	2.11 Nested Iteration
4	2.12 Informal Run-Time Analysis

Progress Check Unit 2 Part 1: Topics 2.1–2.6

Multiple-choice: ~18 questions
Free-response: 1 question
- Methods and Control Structures (partial)

Progress Check Unit 2 Part 2: Topics 2.7–2.12

Multiple-choice: ~21 questions
Free-response: 2 questions
- 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 Class Creation

~20–22 Class Periods | 10–18% AP Exam Weighting

- 1 — 3.1 Abstraction and Program Design
- 5 — 3.2 Impact of Program Design
- 1, 2 — 3.3 Anatomy of a Class
- 2, 3 — 3.4 Constructors
- 2, 3, 4 — 3.5 Methods: How to Write Them
- 2, 4 — 3.6 Methods: Passing and Returning References of an Object
- 2, 3 — 3.7 Class Variables and Methods
- 3, 4 — 3.8 Scope and Access
- 2 — 3.9 `this` Keyword

Progress Check Unit 3 Part 1: Topics 3.1–3.4

Multiple-choice: ~12 questions

Progress Check Unit 3 Part 2: Topics 3.5–3.9

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

UNIT 4 Data Collections

~50–52 Class Periods | 30–40% AP Exam Weighting

- 1, 5 — 4.1 Ethical and Social Issues Around Data Collection
- 1 — 4.2 Introduction to Using Data Sets
- 2, 3 — 4.3 Array Creation and Access
- 2, 3 — 4.4 Array Traversals
- 2, 3, 4 — 4.5 Implementing Array Algorithms
- 2, 3, 4 — 4.6 Using Text Files
- 2 — 4.7 Wrapper Classes
- 2, 3 — 4.8 `ArrayList` Methods
- 2, 3, 4 — 4.9 `ArrayList` Traversals
- 2, 3, 4 — 4.10 Implementing `ArrayList` Algorithms
- 2, 3 — 4.11 2D Array Creation and Access
- 2, 3 — 4.12 2D Array Traversals
- 2, 3, 4 — 4.13 Implementing 2D Array Algorithms
- 2, 3, 4 — 4.14 Searching Algorithms
- 3, 4 — 4.15 Sorting Algorithms
- 3, 4 — 4.16 Recursion
- 4 — 4.17 Recursive Searching and Sorting

Progress Check Unit 4 Part 1: Topics 4.1–4.5

Multiple-choice: ~18 questions
Free-response: 2 questions
- Data Analysis with Array (partial)

Progress Check Unit 4 Part 2: Topics 4.6–4.10

Multiple-choice: ~21 questions
Free-response: 2 questions
- Data Analysis with `ArrayList`

Progress Check Unit 4 Part 3: Topics 4.11–4.17

Multiple-choice: ~21 questions
Free-response: 2 questions
- 2D Array