



AP[®] Computer Science A

Your 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 | 4 | Document Code and Computing Systems |
| 2 | Develop Code | 5 | Use Computers Responsibly |
| 3 | Analyze Code | | |

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)

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

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.