# 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
- Impact of Computing

# **Assess**

Assign the Personal Progress
Checks—either as homework
or in class—for each unit. Each
Personal Progress Check
contains formative multiplechoice 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.



# Primitive Types

~8-10 Class Periods

2.5-5% AP Exam Weighting

- MOD VAR 2
- **1.1** Why Programming? Why Java?
- 4 VAR
- **1.2** Variables and Data Types
- CON 1 2
- 1.3 Expressions and Assignment Statements

**Operators** 

2 5

CON

1.5 Casting and Ranges of Variables

**1.4** Compound Assignment

# **2**

# **Using Objects**

~13-15 Class Periods

5-7.5% AP Exam Weighting

- 2.1 Objects: Instances of Classes
- VAR

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

#### Personal Progress Check 1

Multiple-choice: ~25 questions

#### 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.



# Boolean **Expressions and** if Statements

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

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



# **Iteration**

~14-16 Class Periods 17.5-22.5 AP Exam Weighting

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



# **Writing Classes**

~12-14 Class Periods

5-7.5% AP Exam Weighting

MOD	5.1 Anatomy of a Class
1	
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 3**

Multiple-choice: ~20 questions Free-response: 2 questions

- Methods and Control Structures
- Methods and Control Structures: partial

#### Personal Progress Check 4

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

- Methods and Control Structures
- Methods and Control Structures:

### Personal Progress Check 5

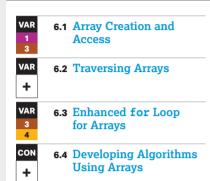
Multiple-choice: ~25 questions Free-response: 2 questions

- Class
- Class: partial



~6-8 Class Periods

10-15% AP Exam Weighting





~10-12 Class Periods 2.5-7.5 AP Exam Weighting

VAR	7.1 Introduction to ArrayList
VAR 2 3	7.2 ArrayList Methods
VAR 2 3	<b>7.3</b> Traversing ArrayLists
3 4	7.4 Developing Algorithms Using ArrayLists
3 5	<b>7.5</b> Searching
CON 2	7.6 Sorting
IOC N/A	7.7 Ethical Issues Around Data Collection



~10-12 Class Periods

7.5-10% AP Exam Weighting

VAR 8.1 2D Arrays

**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):

# 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



~13-15 Class Periods

5-10% AP Exam Weighting

MOD 1 3	9.1 Creating Superclasses and Subclasses
MOD 3 5	<b>9.2</b> 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



~3-5 Class Periods

5-7.5% AP Exam Weighting



10.1 Recursion



**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)