

## Unit 5: Object-Oriented Programming (4 weeks)

The following curriculum map is a day-by-day listing of the AP Computer Science course in chronological order. Each row represents one day of class, based on a medium-paced class. Readings from the textbook and homework assignments are included on the day when they should be assigned. Refer to the Introduction document for information about how to adjust this pacing for your specific classroom.

- Unit 5 Slides
- Unit 5 Word Bank
- Curriculum Assets
- Picture Lab

LP	Title	In Class	Reading	Homework
5.00	Test Review & Reteach	Review test	8.1	Test corrections
5.01	Object Oriented Programming	Practice SC 8.1-8.5 WS 5.1.1	8.2 up to “Mutators and Accessors.”	
5.02	Object State & Behavior	WS 5.2	8.3 up to “The Keyword this.”	SC 8.9-8.11, 8.13-8.16
5.03	Object Initialization: Constructors	WS 5.3.1 WS 5.3.2	8.4	
5.04	Encapsulation	WS 5.4 Mini-lessons		SC 8.22-8.28
5.05	Finding & Fixing Errors	Fix HW	Review Ch. 8 for Picture Lab	Submit questions for review
5.06 01	Picture Lab (day 1)	Picture Lab Activity 1 & 2		Summarize notes since last exam
5.06 02	Picture Lab (day 2)	Picture Lab Picture Lab Activity 3 & 4, notebook checks		Outline Ch. 8
5.06 03	Picture Lab (day 3)	Picture Lab Activity 5, notebook checks	Read and highlight Barron’s Ch. 2, skip this keyword	
5.06 04	Picture Lab (day 4)	Picture Lab Activity 5 & 6, notebook checks		Barron’s Ch. 2 exam, skip #20
5.06 05	Picture Lab (day 5)	Picture Lab Activity 6, Barron’s checks	Read and highlight Barron’s Ch. 5	
5.06 06	Picture Lab (day 6)	Picture Lab Activity 7		SC 8.28, 8.30
5.06 07	Picture Lab (day 7)	Picture Lab Activity 8	8.5	Finish Picture Lab Activity 8
5.06 08	Picture Lab (day 8)	Picture Lab Activity 9		Cont. Picture Lab Activity 9
5.06 09	Picture Lab (day 9)	Picture Lab Activity 9, cont.		Submit questions for review
5.06a 01	Data Lab (day 1)	Data Lab Activity 1 Data Lab		Summarize notes since last exam

LP	Title	In Class	Reading	Homework
5.06a 02	Data Lab (day 2)	Data Lab Activity 2, notebook checks		Outline Ch. 8
5.06a 03	Data Lab (day 3)	Data Lab Activity 3, notebook checks	Read and highlight Barron's Ch. 2, skip this keyword	
5.06a 04	Data Lab (day 4)	Data Lab Activity 3 (day 2), notebook checks		Barron's Ch. 2 exam, skip #20
5.06a 05	Data Lab (day 5)	Data Lab Activity 4, Barron's checks	Read and highlight Barron's Ch. 5	
5.06a 06	Data Lab (day 6)	Data Lab Activity 4 (day 2)		SC 8.28, 8.30
5.06a 07	Data Lab (day 7)	Data Lab Activity 4 (day 3)	8.5	Finish Data Lab Activity 8
5.06a 08	Data Lab (day 8)	Data Lab Activity 4 (day 4)		Cont. Data Lab Activity 9
5.07	Review	Review question WS		Study
5.99	(Unit 5 test)	5.7 Test practice		
		Test 4 Section I		
		Test 4 Section II		
5.XX	PictureLab Alternative			

## 5.00

Lesson 5.00	<i>Test Review &amp; Reteach</i>
<b>Objectives</b>	Students will re-learn or strengthen content knowledge and skills from Unit 4
<b>Assessments</b>	Students will re-submit test answers with updated corrections for partial or full credit, depending on instructor preference.
<b>In Class</b>	Review test
<b>Reading</b>	8.1
<b>Homework</b>	Test corrections

## 5.01

Lesson 5.01	<i>Object Oriented Programming</i>
<b>Objectives</b>	Students will be able to describe the relationship between classes, objects, and client code. Students will be able to predict the output of the code that uses objects.
<b>Assessments</b>	Students will complete Practice questions.

Lesson 5.01	<i>Object Oriented Programming</i>
<b>In Class</b>	Practice SC 8.1–5 WS 5.1.1
<b>Reading</b>	8.2 up to “Mutators and Accessors”
<b>Homework</b>	

## 5.02

Lesson 5.02	<i>Object State &amp; Behavior</i>
<b>Objectives</b>	Students will be able to describe classes, objects, and client code. Students will be able to predict the output of the code that uses objects.
<b>Assessments</b>	Students will complete WS 5.2 individually or in pairs.
<b>In Class</b>	WS 5.2
<b>Reading</b>	8.3 up to “The Keyword this”
<b>Homework</b>	SC 8.9–11,13–16

## 5.03

Lesson 5.03	<i>Object Initialization: Constructors</i>
<b>Objectives</b>	Students will be able to describe and create classes, objects, and client code. Students will be able to predict the output of the code that uses objects.
<b>Assessments</b>	Students will complete Practice questions.
<b>In Class</b>	WS 5.3.1 WS 5.3.2
<b>Reading</b>	8.4
<b>Homework</b>	

## 5.04

Lesson 5.04	<i>Encapsulation</i>
<b>Objectives</b>	Students will be able to manipulate single-dimension arrays using a variety of array transversal algorithms.
<b>Assessments</b>	Students will teach a mini-lesson on printing, searching/replacing, testing for equality, reversing an array, or string traversal. Students will complete a quiz at the end of Day 2.
<b>In Class</b>	WS 5.4 Teach mini-lessons
<b>Reading</b>	
<b>Homework</b>	SC 8.22–28

## 5.05

Lesson 5.05	<i>Finding &amp; Fixing Errors</i>
<b>Objectives</b>	Students will find errors in their returned homework assignments, and correct their code.
<b>Assessments</b>	Students will re-submit all homework assignments with corrected answers.
<b>In Class</b>	Fix homework
<b>Reading</b>	Review Ch. 8 for Picture Lab

Lesson 5.05	<i>Finding &amp; Fixing Errors</i>
<b>Homework</b>	Submit questions for review

### 5.06.1

Lesson 5.06	<i>Picture Lab (Day 1)</i>
<b>Objectives</b>	Students will complete a long-form lab, using two dimensional arrays of objects, array traversing algorithms, program analysis, binary numbers, and inheritance.
<b>Assessments</b>	Picture Lab
<b>In Class</b>	Picture Lab Activity 1 & 2 Picture Lab
<b>Reading</b>	
<b>Homework</b>	Summarize notes since last exam

### 5.06.2

Lesson 5.06	<i>Picture Lab (Day 2)</i>
<b>Objectives</b>	
<b>Assessments</b>	
<b>In Class</b>	Picture Lab Activity 3 & 4 Notebook checks
<b>Reading</b>	
<b>Homework</b>	Outline Ch. 8

### 5.06.3

Lesson 5.06	<i>Picture Lab (Day 3)</i>
<b>Objectives</b>	
<b>Assessments</b>	
<b>In Class</b>	Picture Lab Activity 5 Notebook checks
<b>Reading</b>	Read and highlight Barron's Ch. 2, skip <b>this</b> keyword
<b>Homework</b>	

### 5.06.4

Lesson 5.06	<i>Picture Lab (Day 4)</i>
<b>Objectives</b>	
<b>Assessments</b>	
<b>In Class</b>	Picture Lab Activity 5 & 6 Notebook checks
<b>Reading</b>	
<b>Homework</b>	Barron's Ch. 2 exam (skip #20)

### 5.06.5

Lesson 5.06	<i>Picture Lab (Day 5)</i>
<b>Objectives</b>	
<b>Assessments</b>	
<b>In Class</b>	Picture Lab Activity 6 Barron's checks
<b>Reading</b>	Read and highlight Barron's Ch. 5

Lesson 5.06	<i>Picture Lab (Day 5)</i>
<b>Homework</b>	

## 5.06.6

Lesson 5.06	<i>Picture Lab (Day 6)</i>
<b>Objectives</b>	
<b>Assessments</b>	
<b>In Class</b>	Picture Lab Activity 7
<b>Reading</b>	
<b>Homework</b>	SC 8.28,30

## 5.06.7

Lesson 5.06	<i>Picture Lab (Day 7)</i>
<b>Objectives</b>	
<b>Assessments</b>	
<b>In Class</b>	Picture Lab Activity 8
<b>Reading</b>	8.5
<b>Homework</b>	Finish Picture Lab Activity 8

## 5.06.8

Lesson 5.06	<i>Picture Lab (Day 8)</i>
<b>Objectives</b>	
<b>Assessments</b>	
<b>In Class</b>	Picture Lab Activity 9
<b>Reading</b>	
<b>Homework</b>	Cont. Picture Lab Activity 9

## 5.06.9

Lesson 5.06	<i>Picture Lab (Day 9)</i>
<b>Objectives</b>	
<b>Assessments</b>	
<b>In Class</b>	Picture Lab Activity 9, cont.
<b>Reading</b>	
<b>Homework</b>	Submit questions for review

## 5.06a.1

Lesson 5.06a	<i>Data Lab (Day 1)</i>
<b>Objectives</b>	Students will complete a long-form lab, using classes, objects, two dimensional arrays of objects, array traversing algorithms, program analysis and while/for loops.
<b>Assessments</b>	Students will complete the College Board's AP CS A Data Lab. Students will answer end of activity Check your understanding and open-ended activity.

Lesson 5.06a	<i>Data Lab (Day 1)</i>
<b>In Class</b>	Data Lab Activity 1 Data Lab
<b>Reading</b>	
<b>Homework</b>	Summarize notes since last exam

## 5.06a.2

Lesson 5.06a	<i>Data Lab (Day 2)</i>
<b>Objectives</b>	
<b>Assessments</b>	
<b>In Class</b>	Data Lab Activity 2 Notebook checks
<b>Reading</b>	
<b>Homework</b>	Outline Ch. 8

## 5.06a.3

Lesson 5.06a	<i>Data Lab (Day 3)</i>
<b>Objectives</b>	
<b>Assessments</b>	
<b>In Class</b>	Data Lab Activity 3 Notebook checks
<b>Reading</b>	Read and highlight Barron's Ch. 2, skip <b>this</b> keyword
<b>Homework</b>	

## 5.06a.4

Lesson 5.06a	<i>Data Lab (Day 4)</i>
<b>Objectives</b>	
<b>Assessments</b>	
<b>In Class</b>	Data Lab Activity 3 (day 2) Notebook checks
<b>Reading</b>	
<b>Homework</b>	Barron's Ch. 2 exam (skip #20)

## 5.06a.5

Lesson 5.06a	<i>Data Lab (Day 5)</i>
<b>Objectives</b>	
<b>Assessments</b>	
<b>In Class</b>	Data Lab Activity 4 Barron's checks
<b>Reading</b>	Read and highlight Barron's Ch. 5
<b>Homework</b>	

## 5.06a.6

Lesson 5.06a	<i>Data Lab (Day 6)</i>
<b>Objectives</b>	
<b>Assessments</b>	
<b>In Class</b>	Data Lab Activity 4 (day 2)
<b>Reading</b>	

Lesson 5.06a	<i>Data Lab (Day 6)</i>
<b>Homework</b>	SC 8.28,30

## 5.06a.7

Lesson 5.06a	<i>Data Lab (Day 7)</i>
<b>Objectives</b>	
<b>Assessments</b>	
<b>In Class</b>	Data Lab Activity 4 (day 3)
<b>Reading</b>	8.5
<b>Homework</b>	Finish Data Lab Activity 8

## 5.06a.8

Lesson 5.06a	<i>Data Lab (Day 8)</i>
<b>Objectives</b>	
<b>Assessments</b>	
<b>In Class</b>	Data Lab Activity 4 (day 4)
<b>Reading</b>	
<b>Homework</b>	Cont. Data Lab Activity 9

## 5.07

Lesson 5.07	<i>Review</i>
<b>Objectives</b>	Students will identify weaknesses in their Unit 5 knowledge.
<b>Assessments</b>	Students will create a personalized list of review topics to guide tonight's study session.
<b>In Class</b>	Review questions WS 5.7 Test practice
<b>Reading</b>	
<b>Homework</b>	Study

## 5.99

Unit 5 Test	<i>Object Oriented Programming</i>
<b>In Class</b>	Test 4 Section I Test 4 Section II

## 5.XX

Lesson 5.XX	<i>Programming Project(PictureLab Alternative)</i>
<b>Objectives</b>	Students will be able to conduct user-centered research, plan and create, test, evaluate and share.
<b>Assessments</b>	Apply 2-dimensional arrays, traversal, binary representations of data and submit a complete functional program.
<b>In Class</b>	Project Design
<b>Reading</b>	

Lesson 5.XX	<i>Programming Project(PictureLab Alternative)</i>
<b>Homework</b>	Conduct research work(survey or interviews) and communicating with end-user

## Abbreviations

- **WS** — Worksheet
- **SC** — Self-Check problem (in the textbook)
- **EX** — Exercise (in the textbook)
- **PP** — Programming Project (in the textbook)