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 Picture Lab		Summarize notes since last exam
5.06 02	Picture Lab (day 2)	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 5.7 Test practice		Study
5.99	(Unit 5 test)	Test 4 Section I Test 4 Section II		
5.XX	PictureLab Alternative			

5.00

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

5.01

Lesson 5.01	*Object Oriented Programming*
Objectives	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.
Assessments	Students will complete Practice questions.

Lesson 5.01	*Object Oriented Programming*
In Class	Practice SC 8.1–5 WS 5.1.1
Reading	8.2 up to "*Mutators and Accessors*"
Homework	

5.02

Lesson 5.02	*Object State & Behavior*
Objectives	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.
Assessments	Students will complete WS 5.2 individually or in pairs.
In Class	WS 5.2
Reading	8.3 up to "*The Keyword* this"
Homework	SC 8.9–11,13–16

5.03

Lesson 5.03	*Object Initialization: Constructors*
Objectives	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.
Assessments	Students will complete Practice questions.
In Class	WS 5.3.1 WS 5.3.2
Reading	8.4
Homework	

5.04

Lesson 5.04	*Encapsulation*
Objectives	Students will be able to manipulate single-dimension arrays using a variety of array transversal algorithms.
Assessments	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.
In Class	WS 5.4 Teach mini-lessons
Reading	
Homework	SC 8.22–28

5.05

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

Lesson 5.05	*Finding & Fixing Errors*
Homework	Submit questions for review

5.06.1

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

5.06.2

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

5.06.3

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

5.06.4

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

5.06.5

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

Lesson 5.06	*Picture Lab (Day 5)*
Homework	

5.06.6

Lesson 5.06	*Picture Lab (Day 6)*
Objectives	
Assessments	
In Class	Picture Lab Activity 7
Reading	
Homework	SC 8.28,30

5.06.7

Lesson 5.06	*Picture Lab (Day 7)*
Objectives	
Assessments	
In Class	Picture Lab Activity 8
Reading	8.5
Homework	Finish Picture Lab Activity 8

5.06.8

Lesson 5.06	*Picture Lab (Day 8)*
Objectives	
Assessments	
In Class	Picture Lab Activity 9
Reading	
Homework	Cont. Picture Lab Activity 9

5.06.9

Lesson 5.06	*Picture Lab (Day 9)*
Objectives	
Assessments	
In Class	Picture Lab Activity 9, cont.
Reading	
Homework	Submit questions for review

5.06a.1

Lesson 5.06a	*Data Lab (Day 1)*
Objectives	Students will complete a long-form lab, using classes, objects, two dimensional arrays of objects, array traversing algorithms, program analysis and while/for loops.
Assessments	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	*Data Lab (Day 1)*
In Class	Data Lab Activity 1 Data Lab
Reading	
Homework	Summarize notes since last exam

5.06a.2

Lesson 5.06a	*Data Lab (Day 2)*
Objectives	
Assessments	
In Class	Data Lab Activity 2 Notebook checks
Reading	
Homework	Outline Ch. 8

5.06a.3

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

5.06a.4

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

5.06a.5

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

5.06a.6

Lesson 5.06a	*Data Lab (Day 6)*
Objectives	
Assessments	
In Class	Data Lab Activity 4 (day 2)
Reading	

Lesson 5.06a	*Data Lab (Day 6)*
Homework	SC 8.28,30

5.06a.7

Lesson 5.06a	*Data Lab (Day 7)*
Objectives	
Assessments	
In Class	Data Lab Activity 4 (day 3)
Reading	8.5
Homework	Finish Data Lab Activity 8

5.06a.8

Lesson 5.06a	*Data Lab (Day 8)*
Objectives	
Assessments	
In Class	Data Lab Activity 4 (day 4)
Reading	
Homework	Cont. Data Lab Activity 9

5.07

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

5.99

Unit 5 Test	*Object Oriented Programming*
In Class	Test 4 Section I Test 4 Section II

5.XX

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

Lesson 5.XX	*Programming Project(PictureLab Alternative)*
Homework	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)