Getting Started with CMU CS Academy

1. Teachers must register for an account here
2. Teachers will create a classroom from their teacher portal
3. Students join classroom using one of two methods:
   a. Registering an account with the classroom's *registration code*
   b. Teachers create students accounts from their classroom's People tab and hands out account information

CMU CS Academy's Python offerings are intended to be an alternative to Code.org's AP CSP programming units (3, 4, 6, and 7). Information on Code.org's AP CSP course can be found on their website at https://code.org/educate/csp

For more information in general regarding the AP CSP course, please consider the course and exam description provided by the CollegeBoard, which can be found here: https://apcentral.collegeboard.org/pdf/ap-computer-science-principles-course-and-exam-description.pdf

Using Tracks

Teachers can place students into one of two tracks from their classroom's Tracks tab. The Intro to Python track is for students with no or little programming experience. Students in this track complete all four units. The More in Python track is for students who have taken our CS1 course, or have some experience programming. Students in this track skip units 3 and 4, starting with unit 5.

By default, students are in the Intro to Python track.

The Create Performance Task

As part of the AP Exam, students must complete the Create Performance Task (CPT). To do so, students must write their own project, create a video, and respond to some prompts about their project. Code.org devotes their unit 8 to covering the CPT. We have created a supplemental unit 5 to be used with, or in place of, Code.org's materials. We also provide some additional resources in your Teacher Portal, including example graded projects and a design guide.

In addition, each unit has a section explaining what requirements must be met when using that unit's topics in a student's project. We also provide "Creative Tasks" where students can practice creating small projects. This practice is *very* important for students to be comfortable jumping from exercises to the CPT.

Note that the CPT only requires topics from units 1, 2, 3 so it can be completed before starting unit 4.

Scope and Sequence

The following table contains a high-level preview of the contents of each module in our resources for APCSP

CMU CS Academy Unit Name	Topics
Unit 1 —Intro to CMU Graphics	Drawing Basics, More About Drawing, and Create Task Design
Unit 2—Functions, Mouse Events, Conditionals	Functions, Mouse Events, Properties, if-else Conditionals, Custom Properties, Shape Methods, and if-elif-else
Unit 3 —Groups, Lists, and Loops	Groups, Traversing Groups, Lists
Unit 4—Complex Conditionals, More Events, and Libraries	Complex Conditionals, Key Events, Step Events, Strings, Libraries, and Using Media
Unit 5—Create Performance Task *additional resource to use along with code.org Unit 8*	Create Task Examples, Practice, and Submission
Optional Unit —AP Test Prep	Test Prep and Exam Concept Review
Optional Unit—Supplemental Materials	Nested Loops, 2D Lists, and Project Practice

**A 'Day' equates to about 40 minutes of time.*
Document is subject to change.

Weekly Pacing Guide

The four unit curriculum is intended to span the equivalent of 56 class days. Each class day equates to about forty minutes of instruction. The following table outlines our recommended weekly pacing. The optional sections, Practice Create Tasks, and supplemental materials can be included as you see fit.

(Unit 1) Intro to CMU Graphics	**14 Class Days**
Week 1	
Drawing Basics	● Getting Started — 1 day ● Position and Size — 2 days ● Fills and Borders — 2 days
Week 2	
More About Drawing	● Colors and Gradients — 1 day ● Ovals, Circles, and Stars — 2 days ● Lines, Polygons, and Labels — 1 day
Week 3	
Unit 1 Exercises	● Practice Exercises — 2 Days
Create Task Design	● Intro & Creativity and Planning — 1 day ● Practice Create Task — 2 days
(Unit 2) Functions, Mouse Events, Conditionals	**18 Class Days**
Week 1	
Functions	● Function Basics & Debugging and Test Cases — 2 days ● Multiple Parameters — 2 days
Mouse Events	● onMousePress and onMouseRelease — 1 day
Week 2	
Mouse Events	● Variables — 2 days
Properties	● General Shape Properties — 1 day

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Mid-Unit 2 Practice	● Practice Exercises — 1 day
Week 3	
If-else Conditionals	● if Statements — 1 day ● Using if-else and multiple if’s — 2 days
Custom Properties and Shape Methods	● Custom Properties — 1 day ● Intro to shape methods — 1 day
If-elif-else	● if-elif-else Statements — 1 day
Week 4	
Unit 2 Exercises	● Practice Exercises — 1 day
Create Task Practice	● Creative Task — 2 days
(Unit 3) Groups, Lists, and Loops	**15 Class Days**
Week 1	
Groups	● Intro to groups — 2 days ● Group methods — 1 day
Traversing Groups	● Local variables — 1 day ● Looping through group children — 1 day (of 3)
Week 2	
Traversing Groups	● Looping through group children — 2 days (of 3)
Lists	● Lists and Traversing a list — 2 days ● Traversing a list with len and range — 1 day (of 2)
Week 3	
Lists	● Traversing a list with len and range — 1 day (of 2) ● List methods — 1 day
Unit 3 Exercises	● Practice Exercises — 1 day
Create Task Practice	● Creative Task — 2 days
(Unit 4) Complex Conditionals, More Events, and Libraries	**9 Class Days**
Week 1	

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Complex Conditionals	● Compound conditionals — 1 day ● Nested conditionals — 1 day
Step Events	● onStep — 2 days
Week 2	
Strings	● Types and Input — 1 day ● Strings — 1 day
Libraries	● Functions that Return Values — 1 day ● Random Numbers — 1 day
Using Media	● Images — 1 day
(Optional) AP Test Prep	
Test Prep	● Abstraction ● Algorithms ● Robot and While Loops ● Simulations
Exam Concept Review	● AP Exam Vocab ● AP Exam Notes
(Optional) Supplemental Materials	
Nested Loops and 2D Lists	● Nested For Loops ● Creating and using 2D lists ● More with 2D lists
Project Practice	● Fruit Ninja ● Tic Tac Toe ● Dance Dance Revolution ● Memory Puzzle ● MasterMind ● Sugar Sugar

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