Python with Robotics
AP CSP Curriculum

Unit 3 Overview

Time Required: 2 ½ to 3 weeks

This unit covers Mission 6 and Mission 7. It includes two supplemental lessons to extend learning and prepare for the AP Exam and Create Performance Task.

Unit Outline

Mission 6: Line Follower (3 lessons)

This mission has 8 objectives and two quizzes. It is divided into 3 lessons to give students plenty of time to experiment with their code and test the sensors. Each lesson has an assignment, with one Kahoot! Review at the end of the mission. Students use line sensors to follow a line, and modify the code to successfully navigate curvy lines. They will be guided to follow an algorithm and use functions during code creation. Students will need at least one white surface with a black line to follow. A variety of curvy lines is preferable. They will also use the Test Surfaces used in Mission 5. If you have them available, you do not need to reprint them.

Mission 7: Hot Pursuit (3 lessons)

This mission has 11 objectives and one quiz. It is divided into 3 lessons. This should give students plenty of time to experiment with the code and test the sensors. This mission introduces the CodeBot's proximity sensors: how to read them and use the data to control the CodeBot. Students will need an object to detect, like a folder and a ruler to measure detection distances.

Unit 3: Review and Remix

A remix is an opportunity for students to create their own program from what they learned in the previous missions. A remix can be treated like a practice Create PT. They start from scratch and will not have CodeTrek to guide them. Students can use the planning guide to help them plan and organize their project. During the remix time, you can also review vocabulary and programming concepts from the unit.

Unit Resources

Use these resources throughout the unit. You can add to the documents as needed.

- Unit 3 CodeBot Python Code (by mission)
- Unit 3 Vocabulary (by mission)
- Unit 3 Review and Test Questions
- Test surfaces document (Mission 6 Obj 4-6)

Assessment

Student mastery can be assessed formatively and/or summatively in many ways during Unit 3.

- Use journal entries, daily reflections, or exit tickets as formative assessment.
- Each mission lesson comes with an assignment for students to complete.
- Mission 6 and Mission 7 each have one Kahoot! Review.
- Mission 6 has two programs, and Mission 7 has one finished program that can be used for assessment.
- The Unit 3 Remix project can be used for assessment.
- AP CSP Create Performance Task written response prompts can be assigned as part of the remix assignment for additional practice and/or assessment.
- Unit 3 Kahoot! Reviews for vocabulary and coding questions are available.
- Microsoft Forms tests for Unit 3 vocabulary and coding questions are available.

Materials / Preparation

- Most assignments are best distributed and completed digitally. Prepare the assignments in the digital format that works best for your classroom.
- Make sure you have CodeBots, AA batteries and cables for the students. Two students can share a CodeBot and work in pairs, or you can have 1 to 1 CodeBots.
- For Mission 6, students need the test surfaces paper and a white poster board with black electrical tape to use as a curvy line.
- For Mission 7, students need a ruler for measuring detection distance.