

Physical Computing with Arduino Course Resources

The way students complete lessons in this course looks a bit different than the standard CodeHS courses. The various modules of each lesson are broken down and explained below.

Course Flow

LESSON 3: COMMENTS & PSEUDOCODE		
a		Comments & Pseudocode
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b		Blink Middle
c		X in Pseudocode
d		Exploration: Analog vs. Digital
e		Exploration 1.3 Follow-up
f		Varied Brightness
		Moving Bright Box

a. Introduction Video & Video Quiz

Each lesson begins with an introductory video and quiz as in many of the CodeHS courses you've seen. This video will introduce any computer programming topics students will be using throughout the lesson, but will **not** introduce or explain any of the commands they will be using to build their programs. This content will be covered in other ways later in the lesson.

b. Examples

Students will be given an example program that they will copy and paste into Tinkercad (more info about Tinkercad in pt f below). There are many ways the example programs can be expanded in the [lesson plan](#) for each lesson. (**Note:** All lesson plans for this course are free even if you are on the Free plan!)

c. Pseudocode Exercises

Students will write pseudocode that will complete a certain task to get familiar and comfortable with the concept of planning programs before developing them. In some cases, you can expand these

exercises by having students translate their pseudocode into a working program. You can find more information on this in the [lesson plans](#).

d. Exploration Document

The Exploration is where students will investigate the new commands for the lesson. They will hypothesize about and test various commands to see how they can be used in future programs.

e. Follow-up Video

This video will detail exactly how each command used in the Exploration works and the main concepts students should take away from the Exploration before moving on to the exercises. If you are teaching this course in a physical setting, you may want to go over this content with your students as a group instead of having them watch the video. Slide decks for all videos can be found in the [lesson plans](#).

f. Exercises & Grading

Students will be provided with instructions for each exercise on CodeHS. They will develop and test programs using a simulator found at [Tinkercad.com](https://www.tinkercad.com) and will be able to download their programs to their physical devices using the [Arduino software](#). Once they have a working program, they will copy and paste their code back into the CodeHS exercise where it will be saved and can be graded.

Student code cannot be run directly in the CodeHS editor and, because of this, no autograders exist in the course. There are a few different ways you can monitor your student's work on Tinkercad which are [detailed in this document](#). From here, you'll be able to run your student's work before giving them a grade. To help make grading a bit easier, use the [problem guides](#) that detail FAQs and common issues students may run into when solving each exercise. (**Note:** All problem guides for this course are free even if you are on the Free plan!)

Additional Resources

Resource	Description	Link
Materials List	Students will need to run programs on Arduino devices throughout the course and will need certain materials available to create circuits. Note: If you are teaching this course virtually, it may not be feasible to make physical components available to all students. Much of the course can be completed as is written using the online simulator, with the exception of the thermistor in lesson 2.4, lesson 3.2 (though this can be altered to only use sensors available on Tinkercad), and, depending on student choices, lesson 3.3 and 3.4.	codehs.com/arduino_materials

Reference Sheet	In addition to the DOCs tab, an Arduino reference sheet has been created that may be helpful for some students. Printing out a few of these for the classroom or a set for your students might help them as commands are added to their repertoire.	codehs.com/arduino_reference
Lesson Plans	All lesson plans for this course are free even if you are on the Free plan!	https://codehs.com/library/lesson_plans/8050
Exploration Documents	Student documents are included in the course as Google Docs which students will need to make a copy of if they are completing them virtually. For access to all student and teacher documents in one place, visit this Google Drive folder. If you'd like, you can also make these documents available to your students on another platform.	CodeHS: https://codehs.com/handouts/8050 Google Drive Folder: codehs.com/arduino_explorations
Handouts	All handouts for this course are free even if you are on the Free plan! You can access them on CodeHS and in the Google Drive folder link.	CodeHS: https://codehs.com/handouts/8050 Google Drive Folder: codehs.com/arduino_handouts
Problem Guides	All problem guides for this course are free even if you are on the Free plan!	https://codehs.com/problemguides/8050
Tinkercad Classroom Information	Information about different options to monitor student work on Tinkercad is described with step-by-step directions in this document.	codehs.com/arduino_tinkercad
Software Download Information	Information about the Arduino software that will be needed to download programs to physical devices can be found in this document.	codehs.com/arduino_software

Still have questions? Reach out to us at hello@codehs.com!