

(<http://csmatters.org/pd-new>) P - 08

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*Optional*

# Extending Python: Web Development

## Unit Programming

**Revision Date:** Mar 01, 2018

**Duration:** 75 50-minute sessions



### Lesson Summary

**Summary:** Discover a variety of tools for web development, discuss how web pages are delivered, create web content using Python and Flask. This is an optional lesson for advanced teachers who wish to extend their understanding of Python beyond the AP(R) CS-Principles curriculum requirements for their own benefit.

**Outcomes:** Teachers will be able to describe how static and dynamic content can be generated online using Python code.

**Overview:**

**Total:** 75 min

1. Presentation and coding examples - 50 min
2. Practice - 25 min

### Learning Objectives

### Teacher Resources

Student computer usage for this lesson is: **required**

PROG08\_Extending Python: Web Development Folder (<https://drive.google.com/open?id=0B5vAY-fhOT-ieEZTU3kzZE9YMjQ>)

PyCharm will be used and teachers must have the ability to install extensions.

## Lesson Plan

TOTAL: 75 minutes

### Presentation

Why use the web? The beginning of the presentation outlines reasons why it is valuable to program for the web and displays some of the development and framework options.

Flask is introduced as a tool to use with PyCharm. HTML is reviewed with an explanation of how browsers interpret HTML code.

Server side scripting is introduced along with ways it can be used to customize content followed by a demonstration of the difference between static content and dynamic content generated by server side scripts in conjunction with GET parameters.

### Activity

The teachers should each have their own computer OR they can use pair-programming. The instructor should go through the presentation, making sure to allow teachers enough time to follow along with the programming exercises. Can optionally have teachers record vocabulary and terms in their journals.

Teachers will install Flask into PyCharm by following the directions in the presentation.

Then they will create, modify and experiment with a python file online, index.py

Error handling and templates will be explored.

While going over the lesson, teachers should also be thinking about:

- How/if this lesson could be used in their classroom. (very advanced concepts)
- Any insights about programming or the Internet that this lesson helped them have.

Could assign any of the tasks listed in the "Continuation" slide as homework or, if there is extra time, could use that time to focus on any one of these tasks.

## Options for Differentiated Instruction

Teachers could use pair-programming to follow along with the programming exercises and explore the practice exercises. They can also write down any vocabulary or insights into their journals.



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*Authored by:* CS Matters in Maryland

*Website:* [csmatters.org](http://csmatters.org) (<http://csmatters.org>)

*Email:* [csmattersinmaryland@gmail.com](mailto:csmattersinmaryland@gmail.com) (<mailto:csmattersinmaryland@gmail.com>)

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