

Python Syllabus

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1 Introduction

This course is derived from the The Harvard CS50 Syllabus. In addition to the skills learned in that course, our Python syllabus prioritizes Python expertise and serves as a precursor to Pygame Development.

It is highly recommended that you review fractions & with your kid as we move along the course.

2 Basic Variables and Print

The student will spend this first class understanding how to create strings and integers and print to the console.

```
print(" Hello , -World!")  
print(9)
```

The student will learn to use variables to store data and print multiple variables along with a sentence.

```
a = 5
b = 10
print("a is :", a, "and b is :", b)
```

No floats or booleans yet to avoid confusion. Keep it simple.

3 Basic If Statements

- if, elif, and else
- Booleans
- and, or, and not
- <, <=, >, >=, ==, and !=

4 Advanced Datatypes

- Floats
- Lists
- Dictionaries (store advanced data)

Potentially may return to teach the following concepts although not immediately necessary:

- Tuples
- Sets (no duplicates)

5 Loops

- for and while
- in
- break and continue
- range()
- len()
- enumerate()

6 Debugging

As loops can get buggy, it is important to start debugging now.

- `assert`
- `print`

7 Functions

- `def`
- `return`
- Return Types
- Call Stack Basics

8 Classes

- `class`
- Objects
- Methods
- Inheritance
- Initializing a Class

9 Libraries

- `import`
- `from`
- `random`
- `time.sleep()`

Additional libraries like `math` may be taught, but aren't necessary for PyGame.

10 Additional Concepts

10.1 Exception

- `try`, `except`, and `raise`