

Python for Kiddos - Phase I

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HXCS@Mason

Course Lecturer

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Course Overview

The objective of this course is to expose students to programming, algorithmic design, and computational thinking at a basic level using Python as the programming language. This course features an extremely gentle learning curve for students with no or little programming background. Lectures will be delivered with intensive interactions between the instructor/TA and students at a very slow pace. The design of this course assumes students with basic math background (e.g., with a math level \geq the 4th grade). There will be at least one programming assignment after each lecture.

Course Learning Objectives

After completing this course, a student should be able to

1. understand essential programming concepts such as syntax, variables, and data types,
2. understand basic operators,
3. program with basic user input/output methods,
4. program with essential programming structures such as branches and loops,
5. program with array and list,
6. understand and apply functions,
7. apply the learned knowledge to solve elementary math challenges.

Textbook

This course *does not require* any specific textbook.

Schedule (Tentative)

Week	Topic	Comments
1	Introduction	Programming environment
2	Variables, values, data types, and simple math operators	Swap two variables, int, float, boolean, string, addition, minus, multiplication, division, mod
3	Boolean value and boolean operators	True/False, AND, OR, >, <, ==, !=
4	Strings and casting	Convert strings to int, float, boolean, and vice versa.
5	Basic user input and outputs	An example of implementing a simple calculator with two variables.
6	If-Else	indentation
7	Nested If-Else	
8	While Loops	
9	Nested Loops	
10	Array/List	Enumerate all elements, find the largest element
11	Functions	And a few built-in functions
12	Application 1	Implement your own dividing
13	Application 2	Finding greatest common divisor
14	Application 3	The 36 problem from Mason GPS program
15	Application 4	The hangman game
16	TBD	