Foundations of Programming With Python

Presented by AcademiaEdge

Teachers: Eamon Mukhopadhyay (12th), Avinash Valuveri (12th), Nicolas Jagelka (12th)
Assistant Teacher**:** Raghav Sriram (12th), Eric Guo (12th)

Date and Timings: 2/4-2/25, Saturday from 10:00-11:30 AM EST
Contact Email: contact@academiaedge.com
Phone Number: (317) 993-1983

Formal Requirements: Any student may join if interested. This class is, however, highly recommended for students in grades 3-9.

Material Requirements:

- Computer (Bring To Class)
- Paper and Pencil (Bring To Class)

NOTE: AcademiaEdge will provide extra chromebooks and paper/pencils if needed. However, if students already have these materials, we will respectfully ask them to bring the materials every class session.

About Us and The Course:

We are a group of seniors from Carmel High School. As fellow students, we know how important it is for kids to develop sharp problem-solving skills, and one of the best ways to do that is with programming. We want to help people begin their journey into programming by introducing and teaching students Python, one of the world's most versatile and used programming languages. We also want to introduce mathematical programming concepts to our students so they are proficient in both programming syntax and problem-solving. Avinash Valuveri and Eamon Mukhopadhyay, the Python teachers of this course, are well-versed in Python and have built and developed their own projects. Nick Jagelka, the Mathematics in Programming teacher of this course, has previously served as a math tutor and, as a first-year teacher, has shown great interest in applying mathematics to programming. All of the teachers are excited to help people begin their journey into programming and can't wait to spread their knowledge.

Syllabus:

First Class Schedule:

15 minutes	Introduction to the Class
15 minutes	Scratch Introduction (Movement, Variables, Saying)
15 minutes	Python Introduction (Accessing Python, Repl.it, Hello World)
15 minutes	Mathematics in Programming (Mathematical Operations)
30 minutes	Project (***The Computer Has Spoken***) Work Time

General Class Schedule:

10 minutes	Review the previous lesson, answer any questions
20 minutes	Python Programming lesson, consisting of slideshow presentation and examples. We highly encourage students to take notes during the presentation.
15 minutes	Mathematics in Programming lesson, consisting of slideshow presentation and examples. We highly encourage students to take notes during the presentation.
45 minutes	A brief reflection and summary over learned material, project work time, answer any additional lesson questions

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Course Content

Class focus: Coding Presentation Math Presentation Project and Additional Exercises

1. Introduction To Course
    - Scratch Introduction - Movement, Saying
    - Python Introduction - Accessing Python, Repl.it, Hello World
    - Accessing Google classroom
    - Math Presentation - Mathematical Operations
    - Project: ***The Computer Has Spoken*** (Class 1 Printing Activity)
2. More on Input and Introduction to Output, Variables, Data, Modules
    - Python - Output Review.
    - Variables - Primitive Types
    - String Actions (Concatenation, Formatting) and Type Conversion
    - Modules - import math, import random
    - Math Presentation: Binary
    - Project: ***Choose Your Own Adventure*** (Class 2, 3, 4 Cumulative Project) - Computer Output and User Input
    - Additional Exercises: **Identifying Variables**
3. Conditional Statements, Loops, and Lists
    - Python - Variable Review
    - Conditional Statements - If, Else, Elif
    - For Loops and While Loops
    - Lists and Tuples
    - Math Presentation: Introduction to Boolean Algebra
    - Project: ***Choose Your Own Adventure*** (Class 2, 3, 4 Cumulative Project) - Incorporating Variables Into Conditionals
    - Additional Exercises: **Boolean Algebra Practice**
4. Functions, Introduction to Object Oriented Programming
    - Python - Conditional, Loops, List Review
    - Defining and Calling Functions
    - Creating Classes, Creating Objects
    - Incorporating Functions in Classes
    - Math Presentation: Mathematical Functions and Applications
    - Project: ***Choose Your Own Adventure*** (Class 2, 3, 4 Cumulative Project) - Incorporating Variables Into Conditionals

Rules and Expectations

Classroom Procedures:

We encourage students to ask questions and regularly participate in class as we believe an active classroom environment supports our student's learning. However, we ask students to please raise their hands if they have questions or comments. Also, we would like students to be respectful to their classmates and teachers.

Students, please do not:

- Be disrespectful to teachers or other students
- Play games or engage in other applications during class instruction
- Talk or be disruptive during lectures

Please do:

- Ask questions
- Be attentive
- Be engaged and active throughout the class
- Do assignments thoroughly
- Have Fun!