Introduction to Python

Presented by AcademiaEdge

Teachers: Eamon Mukhopadhyay (10th) and Avinash Valuveri (10th)
Assistant Teacher: Raghav Sriram (10th)

Date and Timings: 2/20-5/22, Saturday from 4-5 PM EST
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Requirements: Any student may join if interested. This class is, however, highly recommended for students ages 11 and up. Students also must have a personal Gmail account, whether it's their own Gmail account or if it is owned by their parents to access google classroom and other course materials.

About Us:

We are a group of sophomores from Carmel High School who want to help people begin their journey into programming by introducing and teaching students Python, one of the worlds most versatile and used programming languages. Avinash Valuveri and Eamon Mukhopadhyay, the teachers of this course, are experienced professionals in python and have built and developed projects of their own. They are excited to help people begin their journey into programming and can't wait to spread their knowledge.

Class Description:

Introduction to Python is a course offered by AcademiaEdge, a nonprofit organization created by high school programmers. There are 13 classes in total, each class is an hour long. A detailed description of the class syllabus can be found below. All classes are virtual and will be held through Zoom. In addition to hosting our classes through Zoom we will be using google classroom to submit assignments and google calendar for parents and students to keep track of classes and assignments. Each class lecture will be recorded and put in a google drive along with the class slides for all students to reference too when doing their assignments.

Students can ask questions at any time during the class and the assistant or teacher will answer them. Additionally, students may message teachers via google classroom or by email and our teachers will respond as soon as possible. In order to give this individualized experience filled with fun projects and assignments guided towards young children, classes will be limited to 10-15 students so that teachers can give high-quality attention to each student. Sign up is first come first serve and a waitlist may be created if there is excessive student participation. This course will be guided towards students of ages 11 and up, but any student may join if interested. We are excited to introduce the world of Python Programming to your child!

Syllabus:

First Class Schedule:

15 minutes	Introduction to Python
15 minutes	Installing and Setting up Python on Personal Link
15 minutes	Go over the syllabus, explain class resources and policies

Second Class Schedule:

5 minutes	Beginning of Class Buffer Time
10 minutes	Go over how to run Python Code
20 minutes	Go over the semantics of Python
10 minutes	Reflections, Questions, and assign Homework

General Class Schedule:

10 minutes	Going over homework, review the previous lesson, Answer any questions
25 minutes	Go over the days lesson using interactive examples, practice, and projects
10 minutes	A reflection and summary of what was learned that day, go over and questions and assign homework

Course Content

1. First Class and Fundamentals of Python
    a. Introduction to Python
    b. Installing Python on personal computer
    c. Class Resources, Policies, Expectations
    d. Running Python Programs
    e. Writing Python Code
2. Working with Data, Input and Output
    a. Primitive Types and Variables
    b. Using Numeric Variables
    c. Using String Variables
    d. PEP8
    e. Input
3. Working with Strings and Type Conversion
    a. Review of Second Class
    b. String Formatting
    c. Type conversion
    d. String Concatenation
4. Having your Computer Make Decisions
    a. Review of Third Class
    b. The "if" Statement
    c. Logical Operators
    d. More Complex Expressions
5. Loops, Lists, and Tuples
    a. "For" Loops
    b. "While" Loop
    c. Nested Loops
    d. Lists
    e. Tuples
6. Numbers, Data, Lists, and Tuples
    a. Numeric, Date Functions, lists, and tuples
    b. Dates and Times
    c. Advanced Data and Time Management
    d. Random Numbers
    e. The Math Library
    f. Lists and Tuples
    g. List Functions
7. Project #1

    a. Interactive Number Guesser
8. Functions
    a. Writing and Calling Functions
    b. Function Inputs and Outputs
    c. Local and Global Scope
9. Python Classes
    a. Thinking about Objects
    b. Class Variables and Methods
    c. Managing Class Files
10. Class Instances
    a. Creating Objects with Instance Data
    b. Instance Methods
    c. Managing Objects
11. Introduction to Machine Learning NumPy
    a. What is Machine Learning and NumPy?
    b. Python Fundamentals in Machine Learning
    c. What are the basics and functions to NumPy
    d. Neural Network
12. Final Project Part 1
    a. Choose your own game
13. Final Project: Part 2
    a. Show and Tell

Rules and Expectations

Classroom Procedures:

Students are to stay muted at all times except if they have a question or when asked to be unmuted. The student may temporarily unmute himself to ask his/her question. Alternatively, if the student would not like to speak in front of the class, then the student may ask his/her question in the Zoom chat. We encourage students to ask questions and regularly participate in class. Also, we would like students to be respectful to their classmates and teachers.

Students, please do not:

- Eat or drink with your microphone turned on
- Be disrespectful to teachers or other students
- Put inappropriate pictures on your webcam
- Send inappropriate messages in the class chat

Please do:

- Ask questions
- Be attentive
- Be engaged and active throughout the class
- Make sure to have your camera on throughout the class
- Do assignments thoroughly
- Submit assignments before deadline
- Have Fun!

Google Classroom Layout:

.Each lesson's recording will be found on google classroom along with the class's slides and notes. Homework assignments will be assigned and submitted via google classroom as well. Students can ask questions through the messaging system in google classroom or via email.

Homework procedures:

Students will be given homework in google classroom via google docs, which will consist of inserting screenshots or short-answer/multiple-choice questions, or google forms. The google forms will mainly be used for knowledge checks, while the google docs will be used for general homework assignments. Each assignment is due 24 hours before the next class to give ample time for teachers to grade students' assignments. Students should send a message or an email if they are unable to turn in their homework by then with a valid explanation of why they will not be able to turn in their homework by the deadline, and the teachers will come up with a possible solution. This also applies to missing a class. Course projects will also be assigned and submitted through Google Classroom. If a student misses an assignment deadline repeatedly an email will be send to his/her parent.