

The logo for Techlab Education, featuring the word "techlab" in a bold, white, sans-serif font above the word "education" in a smaller, grey, sans-serif font, all contained within a blue square.

techlab
education

Course Information

Python

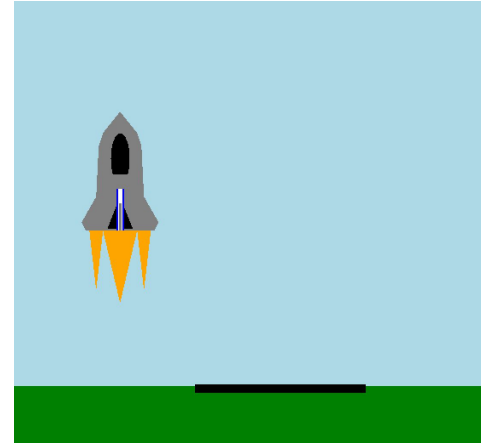
Find us at techlab.education



What is our teaching philosophy?

Students will...

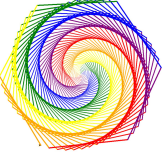
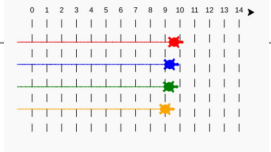
- ❖ Learn core fundamental concepts
- ❖ Experience visual and interactive learning
- ❖ Watch their *own* code come alive
- ❖ Develop *lifelong* problem solving skills



Introduction to Python

- Recommended Grades: 6+, For beginners with no prior coding experience
- Course Description
 - The IEEE ranked Python as the #1 programming language in 2018. With its extensive library of open source tools, web frameworks, and AI/ML packages, it is a language which is making waves and is a very accessible language for new programmers. This course will introduce kids to the fundamentals of programming and in particular, how Python works. They will put concepts into action with hands on problem solving and an end project showcasing a turtle race.
- Learning Objectives
 - Basics of algorithmic thinking and implementation via Python
 - Variables, Data types, Operations
 - Computer Logic and Looping
- Prerequisites: None

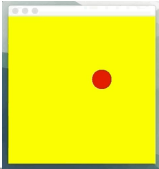
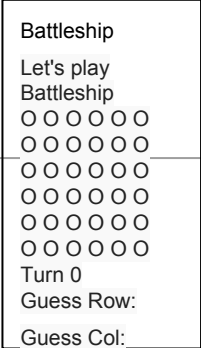
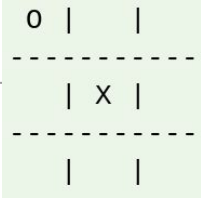
Intro Python Course Outline

Modules	Learning Goals	Sample Projects
Module1: Introduction to Computing <ul style="list-style-type: none">Basics of computingAlgorithmic ThinkingPython	How programming languages work, implementing simple instructions in Python	Sample problem: <i>Read in a name and print out Hello + name</i>
Module2: Logic <ul style="list-style-type: none">Variables & Data typesOperationsBoolean Logic	How to use variables and operate on them. Thinking in terms of booleans and if then else type statements	Sample problem: <i>Create a quiz game</i>
Module3: Libraries & Loops <ul style="list-style-type: none">Introducing Turtle LibraryLoops	Using libraries. Understanding how loops work	
Module4: Functions	How to create your own library of functions	
Module5: Put it all together <ul style="list-style-type: none">Project	Constructing a fun turtle race program using logic, loops and libraries	

Intermediate Python

- Recommended Grades: 6+
- Course Description
 - The IEEE ranked Python as the #1 programming language in 2018. With its extensive library of open source tools, web frameworks, and AI/ML packages and is widely used in the industry. This course will take from concepts the kids have already learned and advance their knowledge into more detailed data structures such as lists and strings, which is where the power of Python shines.
- Learning Objectives
 - Algorithmic thinking and implementation via Python
 - Advanced Data types: Strings, Arrays, Matrices
 - Nested Loops
 - Recursion
- Prerequisites: Intro to Python

Intermediate Python Course Outline

Modules	Learning Goals	Sample Projects
<p>Module1: Recap</p> <ul style="list-style-type: none">• Variables, Data types• Logic & Loops• Libraries & Functions	<p>Drill into basics</p>	
<p>Module2: Advanced Data Types - I</p> <ul style="list-style-type: none">• Strings• Lists• Nested Loops	<p>Understanding more complex data types which is the powerhouse for python: Strings & Lists (also known as arrays)</p>	
<p>Module3: Data Types - 2</p> <ul style="list-style-type: none">• 2D Lists• Nested Loops	<p>Understanding matrices, the fundamental data structures for math logic used in Machine Learning</p>	
<p>Module4: Recursion</p>	<p>How recursion works</p>	
<p>Module5: Put it all together</p> <ul style="list-style-type: none">• Project	<p>Constructing a cipher to code and decode strings, tic tac toe - two player and one player (against the computer!)</p>	