

The Syllabus

Beginner (Python) Class

Build:

1. 2-Player Rock Paper Scissors game
2. Contact Book application
3. Quiz Game
4. Birthday Tracker
5. Currency Converter
6. BMI/TDEE Calculator

Week	Topic	Detail
1.	Course overview, Setup and Hello World	<ol style="list-style-type: none">1. Introduction<ul style="list-style-type: none">• What is programming?• What is Python?• Why Python?• Various Python versions2. Install Python3. Install code editor4. The command line basics <p>End of Class Exercise:</p> <ul style="list-style-type: none">- use cmd to create a folder, navigate, etc- Run Hello World
2.	Git Basics	<ol style="list-style-type: none">1. Introduction<ul style="list-style-type: none">• Why learn this2. Concept overview3. Commands Overview4. Markdown Basics <p>End of Class Exercise:</p> <ul style="list-style-type: none">- use cmd to create a folder, navigate, etc- <i>git clone</i> the course repo- run <i>countdown.py</i>
3.	Variables, Data Types and Arithmetic. Arrays and Lists.	<ol style="list-style-type: none">1. Introduction2. Data types and Casting3. Arithmetic & String Concatenation4. Arrays and Lists5. Comments

		<p>Problem to Solve:</p> <ul style="list-style-type: none"> • Calculate Area of Triangle • Pythagoras Theorem <p>End of Class Exercise:</p> <ul style="list-style-type: none"> • Calculate Squares • Calculate Area of Rectangle <p>Take Home Challenge:</p> <ul style="list-style-type: none"> • Calculate volume of rectangular block • Calculate area of Circle • Calculate volume of Sphere
4.	Conditional Statements	<ol style="list-style-type: none"> 1. Discuss THC 2. Introduction 3. Conditional operators, and if statements 4. Input and Output <p>Problem to Solve:</p> <ul style="list-style-type: none"> • Calculate BMI <p>End of Class Exercise:</p> <ul style="list-style-type: none"> • Write if statement <p>Take Home Challenge:</p> <ul style="list-style-type: none"> • Number guessing game • Calculate Area of Triangle or Rectangle
5.	Loops	<ol style="list-style-type: none"> 1. Discuss THC 2. Introduction 3. For loops, while loops <p>Problem to Solve (PTS):</p> <ul style="list-style-type: none"> • Countdown program • Print Even Numbers • Enhancement to calculate BMI <p>End of Class Exercise:</p> <ul style="list-style-type: none"> • Multiples of 2 loop • Odd numbers only <p>Take Home Challenge:</p> <ul style="list-style-type: none"> • Fibonacci sequence • Looped Number Guessing Game

6.	Functions and Recursion	<ol style="list-style-type: none"> 1. Discuss THC 2. Introduction 3. Functions 4. Recursions 5. Refactor <p>Problem to Solve:</p> <ul style="list-style-type: none"> • Is even • Area of rectangle • Factorial • BMI Calculator (refactor) • Number guessing game (refactor) <p>End of Class Exercise:</p> <ul style="list-style-type: none"> • Is Odd • StringConcatenator (e.g., getFullName) <p>Take Home Challenge:</p> <ul style="list-style-type: none"> • Use functions to calculate volume of 10 spheres of various radii • Convert Fibonacci sequence into function that takes 1 argument of how many numbers to show
7.	Classes, objects and dictionaries	<ol style="list-style-type: none"> 1. Discuss THC 2. Introduction 3. Classes 4. Objects 5. Dictionaries 6. Imports and JSON parsing <p>Problem to Solve:</p> <ul style="list-style-type: none"> • ContactBook Application • Needs menu <p>End of Class Exercise:</p> <ul style="list-style-type: none"> • Employee Class <ul style="list-style-type: none"> ○ Name ○ Id ○ Position • Store employees in list • Display all employees <p>Take Home Challenge:</p> <ul style="list-style-type: none"> • PatientsBook Application • Store in JSON

8.	Course Project: Quiz Game	<ol style="list-style-type: none"> 1. Introduction 2. Setup Git 3. Get a list of question-answer dictionary <p>Problem to Solve:</p> <ul style="list-style-type: none"> • The Quiz Game <p>End of Class Exercise:</p> <p>Pick your own project:</p> <ul style="list-style-type: none"> • Birthday Tracker – birthdates are saved as JSON • 2- player Rock-Papers-Scissors game • Inventory System: can insert new item, search by name, display all, update item, must have menu, and able to save changes • Tic Tac Toe • Quiz Game with Score Board <p>Take Home Challenge:</p> <ul style="list-style-type: none"> • Project
9.	Course Project: Quiz Game	<ol style="list-style-type: none"> 1. Q & A <p>Problem to Solve:</p> <ul style="list-style-type: none"> • Quiz Game (continued) • Calculate score • Give grading according to score range <p>End of Class Exercise:</p> <ul style="list-style-type: none"> • Project <p>Take Home Challenge:</p> <ul style="list-style-type: none"> • Project
10.	Course Completion	<ol style="list-style-type: none"> 1. Project completion 2. Q&A 5. Feedback with Google Form 6. Recap 7. Suggested Projects 8. Advertise Intermediate Course 9. Self-study topics 10. Other websites for reference