

The Syllabus

Beginner (Python) Class

Build:

1. 2-Player Rock Paper Scissors game
2. Contact Book application
3. Quiz Game
4. Birthday Tracker
5. TDEE Calculator
6. Tic Tac Toe Game

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 • Calculate Volume of Cone <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. Understanding the Truth Table 4. Conditional operators, and if statements 5. 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. Arrays and Lists Revisit (indexing) 4. 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 3 loop • Odd numbers only <p>Take Home Challenge:</p> <ul style="list-style-type: none"> • Fibonacci sequence • Palindrome Checker

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"> • Fibonacci Sequence Recursion • Self-study: Pass by reference vs Pass by value
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/TXT 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 • Word Counter from TXT file
8.	Course Project: Quiz Game	<ol style="list-style-type: none"> 1. Introduction 2. Setup Git

		<p>3. Get a list of question-answer dictionary</p> <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	<p>1. Q & A</p> <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 <ul style="list-style-type: none"> ○ Error Handling ○ 10. Other websites for reference