The Syllabus

Beginner (Python) Class

Build:

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

Week	Topic	Detail
1.	Course overview, Setup and Hello World	1. Introduction • What is programming? • What is Python? • Why Python? • Various Python versions 2. Install Python 3. Install code editor 4. The command line basics End of Class Exercise: - use cmd to create a folder, navigate, etc - Run Hello World
2.	Git Basics	1. Introduction • Why learn this 2. Concept overview 3. Commands Overview 4. Markdown Basics End of Class Exercise: - use cmd to create a folder, navigate, etc - ***git clone*** the course repo - run *countdown.py*
3.	Variables, Data Types and Arithmetic. Arrays and Lists.	1. Introduction 2. Data types and Casting 3. Arithmetic & String Concatenation 4. Arrays and Lists 5. Comments Problem to Solve: • Calculate Area of Triangle

		• Calculate Volume of Cone End of Class Exercise: • Calculate Squares • Calculate Area of Rectangle Take Home Challenge: • Calculate volume of rectangular block • Calculate area of Circle • Calculate volume of Sphere
4.	Conditional Statements	1. Discuss THC 2. Introduction 3. Understanding the Truth Table 4. Conditional operators, and if statements 5. Input and Output Problem to Solve: • Calculate BMI End of Class Exercise: • Write if statement Take Home Challenge: • Number guessing game • Calculate Area of Triangle or Rectangle
5.	Loops	1. Discuss THC 2. Introduction 3. Arrays and Lists Revisit (indexing) 4. For loops, while loops Problem to Solve (PTS): • Countdown program • Print Even Numbers • Enhancement to calculate BMI End of Class Exercise: • Multiples of 2 loop • Odd numbers only Take Home Challenge: • Fibonacci sequence • Looped Number Guessing Game

6.	Functions and Recursion	1. Discuss THC 2. Introduction 3. Functions 4. Recursions 5. Refactor Problem to Solve: • Is even • Area of rectangle • Factorial • BMI Calculator (refactor) • Number guessing game (refactor) End of Class Exercise: • Is Odd • StringConcatenator (e.g., getFullName) Take Home Challenge: • 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	1. Discuss THC
		2. Introduction
		3. Classes
		4. Objects
		5. Dictionaries
		6. Imports and JSON parsing
		
		Problem to Solve:
		• ContactBook Application
		• Needs menu
		
		End of Class Exercise:
		• Employee Class
		  ○ Name
		  ○ Id
		  ○ Position
		• Store employees in list
		• Display all employees
		
		Take Home Challenge:
		• PatientsBook Application
		• Store in JSON

8.	Course Project: Quiz Game	1. Introduction 2. Setup Git 3. Get a list of question-answer dictionary Problem to Solve: • The Quiz Game End of Class Exercise: Pick your own project: • 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 Take Home Challenge: • Project
9.	Course Project: Quiz Game	1. Q & A Problem to Solve: • Quiz Game (continued) • Calculate score • Give grading according to score range End of Class Exercise: • Project Take Home Challenge: • Project
10.	Course Completion	1. Project completion 2. Q&A 5. Feedback with Google Form 6. Recap 7. Suggested Projects 8. Advertise Intermediate Course 9. Self-study topics ○ Error Handling ○ 10. Other websites for reference