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 3 loop • Odd numbers only Take Home Challenge: • Fibonacci sequence • Palindrome Checker

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/TXT parsing
		
		Problem to Solve:
		• ContactBook Application
		• Needs menu
		
		End of Class Exercise:
		• Employee Class
		    o Name
		    o Id
		    o Position
		• Store employees in list
		• Display all employees
		
		Take Home Challenge:
		• PatientsBook Application
		• Store in JSON
		• Word Counter from TXT file

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
		    o Error Handling
		    o
		10. Other websites for reference