Fairfax Collegiate

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Intro to Python 5-6 Syllabus

Course Goals

1 Learn Basic Programming
Students learn basic programming concepts such as variables, loops, functions, dictionaries, and classes using the intuitive and beginner-friendly language Python.

2 Develop Problem Solving Skills
Students learn to use programming as a tool to solve problems that would be difficult otherwise.

3 Prepare for More Advanced Programming
Students practice basic concepts of programming that they can go on to apply to other programming languages and environments, giving them a head start in future courses.

Course Topics

1 Introduction to Programming
Students learn about how programming works and are introduced to the Python programming language. Students learn about basic components of Python syntax, such as key words and indentation.

2 Hello World
Students are introduced with a general explanation both for how computers process information as well as how students should model it.

3 Variables
Students learn to use variables, the core building blocks of code, to their advantage.

4 If Statements
Students learn how to model their code through if-statements, which provide the framework for the logic intrinsic in software.

5 Loops
Students practice the use of both for loops and while loops, the slightly more involved cousin of if statements when it comes to logically laying out an idea.

6 Functions
Students practice the use of functions, which are used to keep code neat and to organize a coder's thoughts.

7 Lists
Students learn to write lists, which store values together in a logical and meaningful way, and to iterate through the contents of lists.

8 Dictionaries
Students practice the use of dictionaries, which are similar to lists except dictionaries can use anything rather than just numbers to access an element. Students also learn how to iterate through dictionaries.

9 Classes
Students practice the use of classes, a type of object with both variables and methods, as well as writing the methods within

classes and subclasses.

Course Schedule

Day 1

Icebreaker and Introduction Lesson: What is Code
A simple icebreaker, get to know your students, and your students get to know you.

Intro to Programming, Hello World, and Variables
Basic intro to programming.

Overview of data types in Python
Looking at the different basic variable types in Python.

Practice with variable types
Looking at the different basic variable types in Python.

Day 2

Mad-Lib Activity
Mad-Lib Activity

If Statements: If, Else, and Elif
How if blocks work in Python.

If, elif, else flow block
Looking at the flow of an if statement block.

If Statements: Rock, Paper, Scissors
Basic rock paper scissors with student input.

Day 3

Lists
Lists or Arrays in Python.

Loops in Programming and While Loops
Intro to loops, and While Loops

For Loops
For Loops

Day 4

Using for and while loops interchangeably
Practice using loops.

Putting it together
Culmination of concepts learned so far.

String Manipulation and Concatenation

String Manipulation and Concatenation (substrings).

Day 5

String Manipulation and Concatenation
String Manipulation and Concatenation (substrings).

Basic String Operations
Helpful String functions in Python.

Dictionaries
Dictionaries

Hangman
Have students create a hangman game in Python.

Day 6

Hangman
Have students create a hangman game in Python.

Functions
Functions

Making simple functions
Practice making simple functions.

Day 7

File I/O
Lecture on how to do File input and output.

Practicing File I/O
Using file input and output on a text file with English words.

Day 8

Classes in programming
The concept of classes.

How to use classes in Python
How Python handles classes, and all expected functionality.

Shapes Class Activity
Classes for different shapes.

Day 9

Modules, and a few examples.
Extra Time

Revisiting rock paper scissors

Making rock paper scissors into a fully fleshed out game against the computer.

Day 10

Final Project
Tic-Tac-Toe.

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