Fairfax Collegiate

703 481-3080 · www.FairfaxCollegiate.com

Minecraft and Python 5-6 Syllabus

Course Goals

1 Python Programming
Students write code from scratch in the Python programming language, a beginner-friendly language whose concepts transfer well to many other programming languages.

2 Minecraft API
Students learn about the concept of an application programming interface (API), which is a set of commands that allow Python to directly alter the Minecraft game world.

3 Algorithmic Thinking
Students gain experience with translating creative ideas into step-by-step instructions that a computer can carry out.

4 Computer-Assisted World Design
Students learn to view computer programming as a tool that allows them to create on a larger scale than would be possible if they were building one block at a time.

Course Topics

1 3D Coordinate Systems
Students learn about three-dimensional coordinate systems and how they are used to describe the position of the player and blocks within the Minecraft world.

2 Structure Creation
Students use commands from the Minecraft API to build shapes and structures of varying complexity.

3 Parameters
Students design Python scripts to accept additional user input when they are run.

4 Loops
Students learn about for loops and while loops and how to use them to write more efficient Python scripts.

5 Functions
Students learn about Python functions and how they can be used to decompose a complicated script into smaller pieces.

6 File Input/Output
Students use Python to save and retrieve chunks of data from a computer's filesystem, allowing for more complex structures to be automatically built.

Course Schedule

Day 1

Introductions

Students introduce themselves to each other and the instructor.

What The Minecraft?!
Students explore their Minecraft worlds and begin to look at some basic programming code.

Coordinates
Students begin to learn and understand the 3-D coordinate plane.

Q-oordinate Quiz
Students learn about the 3-D coordinate plane and take a fun quiz reviewing that information.

Day 2

iTeleport
Students learn the basic teleportation commands and the differences between floats and integers.

Tour Guide for a Day
Students create a guided tour of the Imperial City.

While Loops
Students learn and understand the concept of while loops.

Day 3

For Loops
Students learn and understand for loops.

House Builder
Students build their first house using newly learned code.

Day 4

Diamond Block Door
Students create a door that will only open when they stand on a diamond block.

Diamond Finder
Students write a program that looks for diamond ore.

Day 5

How to be an Arborist
Students become arborists, one who plants and cares for trees.

Day 6

Instant Portal
Students create a program that instantly creates a lit nether portal.

How to be an Arborist
Students become arborists, one who plants and cares for trees.

Day 7

Hello File World

Students learn the basics of file reading and writing.

Day 8

Structure Scanner

Students write a program that scans a structure to a file.

Day 9

Coding a City

Students build a city with code.

Day 10

Coding a City

Students build a city with code.

Updated on 4/3/2022