Educational Plan for High School

Develop an educational Plan that Outlines how the knowledge and skills gained from the project can be adapted in the classroom.

Title: What is Python?

Python is a high-level programming language that is very popular among new programmers.
https://www.teachengineering.org/activities/view/uom-2552-what-is-python-activity

Summary:
Coding is a critical tool in most modern applications and can be a useful skill for engineers to apply in a variety of design settings. In this activity, students will learn basic coding in Python, known for its ease of use and various applications. Students will learn to make sense of basic programming concepts such as if-else statements, loops, and functions. In this lessons students will learn about operators, a Python syntax such as ("=") and its use in programming versus mathematics.
After class discussion, students will complete a jUpyter Notebook activity that will guide them through: (1) using Jupyter Notebook to run pre-written Python codes and (2) plotting linear and quadratic functions and editing existing plots using Python code.
This engineering curriculum aligns to Next Generation Science Standards (NGSS).

Learning Objectives:
Students will be able to:

- Understand the basic coding of Python
- Use and edit Python code to plot basic functions in a Jupyter Notebook.
- Use problem solving skills to write Python code to accomplish a simple task.

Educational Standards
Students will develop an understanding of the relationships among technologies and the connections between technology and other fields of study. (Grades K - 12)

Presentation
What is Python? Powerpoint presentation to share with students through - LMS program.

Introduction

Today we are going to learn about a programming language called Python that can be used to code software. Python is a computer programming language used to do lots of cool things, like build websites and software, create automatic tasks and conduct data analysis.

Why learn Python? Coding is becoming an increasingly sought after skill, particularly in engineering field. As the world become more digital with cellphones, home cameras, cars, banks, TV's, hospitals, grocery stores, online shopping - nearly all parts of our lives depend on computer code. Knowing how to code or computer program is not just for programmers - many careers now want people who know how to code.

In this lesson students will learn how to declare variables, create and call functions, use loops, and more! They will also learn how to use the Jupyter Notebook - a newer tool that is specialized for teaching students to write, use the run Python within a web browser. They will learn how to write and interpret code for plotting simple functions like lines and parabolas.

After completing this activity, they will better understand how Python code is written and be able to recognize common coding concepts, like if/else statements and loops.

Pre Activity

Student will complete the Pre-Assessment on What is Python.

Student will watch a presentation of What is Python.

Materials will be available first day of class, Jupyter Notebook will be opened before class.

Students will have google accounts to view materials from lesson

Gruoping students to work on coding together.

Assignment

Students will create a code in Python from the instructions provided.

Assignments will be created in a google slide and shared with Group members.

Teacher will have access to all google slides and be able to help students with the lesson.

Vocabulary/Definitions

Google Doc with vocabulary will be in student LMS and on the presentation to make sure they understand the tems of the program.

Conclusion

Student will submit coding in their LMS platform

Students will have a post assessment to further their understanding of coding.