Introduction to Python

(Professor Dave)^2

The University of Austin

Introduction to Python

- **What is Python?**
  - Python is a versatile, high-level programming language.
  - Used in web development, data analysis, machine learning, automation, and more.
- **Why Python?**
  - Easy to learn and read.
  - Extensive community and resources.
  - Powerful libraries for various fields: science, art, business, and more.

Value-prop for STEM

- **Data Science & Machine Learning**:
  - Libraries: NumPy, Pandas, TensorFlow, SciPy.
  - Used for data manipulation, statistical analysis, and building models.
- **Engineering & Simulations**:
  - Used in simulations, optimization, and algorithmic computations.

Value-prop for Humanities?

Yes!

- **Text Analysis & Digital Humanities**:
  - Libraries: NLTK, spaCy for natural language processing.
  - Analyze large amounts of text for sentiment, themes, and word frequencies.
- **Creative Arts & Media**:
  - Python is used in image processing, media production, and art installations.
  - Libraries like PIL (Pillow) and Pygame.

Basic Python Syntax (Quick Overview)

- **Variables & Types**:

```
x = 10   # Integer
name = "Alice"   # String
is_student = True   # Boolean
```

- **Functions**:

```
def greet():
    print("Hello, world!")
```

- **Loops & Conditionals**:

```
for i in range(5):
    if i % 2 == 0:
        print(i, "is even")
```

Installing Python

- **Step 1: Download Python**:
  - Go to python.org.
  - Click “Downloads” and select your operating system (Windows, macOS, Linux).
- **Step 2: Install Python**:
  - Follow installation instructions on screen.
  - Ensure you check the box to “Add Python to PATH.”

Using Python

- **Step 1: Open a Terminal/Command Prompt**:
  - Type `python` or `python3` to start the Python interpreter.
- **Step 2: Running Scripts**:
  - Create a `.py` file using a text editor (e.g., Sublime Text, Notepad++).
  - Run the script in the terminal: `python script_name.py`.
- **Step 3: Using Jupyter Notebooks**:
  - Install with `pip install notebook`.
  - Start a notebook by typing `jupyter notebook` in your terminal.