**Learning Python for Fun and Profit**

**Course Outline**

<https://github.com/MichaelTroyer/Learning_Python_for_Fun_and_Profit>

1. Introduction
   1. Why Python:
      1. GIS automation
      2. Data management
      3. Data science and analytics
      4. Web scraping
   2. Python 2.x vs Python 3.x
   3. How and Where to Run Python:
      1. Command line
      2. Interactive terminals (standalone and embedded)
      3. IDEs (Spyder, Rodeo, etc.)
      4. Notebooks (Jupyter, ArcGIS)
      5. Local vs. network resources
   4. Installation
      1. [Standard Python](https://www.python.org/downloads/)
      2. [The Anaconda Distribution](https://www.anaconda.com/distribution/)
2. Basics
   1. Syntax:
      1. White space and indentation
   2. Expressions and variable assignment
   3. Comments
   4. Files, modules, and imports
   5. PEP-8 style guide
   6. The Zen of Python
3. Data Types
   1. Numeric
      1. Integer
      2. Float
      3. Numeric operations
   2. Strings
      1. Syntax (quotes and escape characters)
      2. Operations (len, index, slice, in/not in)
   3. Lists
      1. Syntax – []
      2. Operations (len, index, slice, append, sort, concatenation, in/not in)
   4. Dictionaries
      1. Syntax – {}
      2. Operations (keys, values, items, get, update, in/not it)
   5. Others
      1. Tuples, sets
      2. Specialized data types
4. Flow Control
   1. Flow charts
   2. Boolean (True/False, 0/1, truthy/falsey)
   3. Comparison Operators (==, <, >, <=, >=)
   4. Boolean Operators (and, or, not)
   5. Conditions
   6. Code blocks
   7. if, elif, else
   8. For, while, break, continue
5. Functions
   1. Functions as reusable code
   2. The def statement
   3. Parameters
      1. Positional
      2. Keyword
   4. Doc strings
   5. The return statement
      1. Implicit None
   6. Function scope and closures
6. Program Development:
   1. Designing an application
   2. Project structure
   3. Testing and debugging
   4. Installing packages
   5. Managing dependencies
   6. Distribution
7. Practical Applications
   1. GIS automation and batch processing
   2. Reading and writing files
   3. Web Scraping
   4. And beyond…
8. Advanced Topics:
   1. Classes and OOP
9. Resources
   1. Print
      1. Effective Python
      2. Python Tricks
      3. Data Science from Scratch
   2. Online
      1. Python.org
      2. Real Python
   3. Newsletters
      1. Python Weekly
   4. Ways to stay sharp
      1. Kaggle
      2. Data.world
      3. Project Euler