**Course Outline**  
  
**An Introduction to Python**  
Python Versions, and Environment Setup   
Executing Python from the Command Line  
IDLE  
Python Reserved Words, Naming Conventions

**Basic Python Syntax**  
Basic Syntax  
Comments  
Data Type: integer, float, bool, string

String Methods  
Conversion Functions  
Simple Input and Output  
The % Method  
The print Function

**Language Components**  
Indenting Requirements  
The if Statement   
Relational Operators  
Logical Operators  
Bit Wise Operators  
The while Loop  
break and continue  
The for Loop  
  
**4. Collections and Data Structure**   
Lists  
Tuples  
Sets  
Dictionaries  
Sorting Dictionaries  
Copying Collections  
  
**5. Functions**  
Defining Your Own Functions  
Parameters  
Keyword and Optional Parameters  
Passing Collections to a Function  
Variable Number of Arguments  
Scope  
Passing Functions to a Function  
Mapping Functions in a Dictionary  
Lambda  
Inner Functions  
  
**6. Modules**  
Modules  
Standard Modules – sys

Standard Modules – os

Standard Modules - re  
Standard Modules - math  
Standard Modules - time  
The dir Function  
  
**7. Exceptions**  
Errors  
Run Time Errors  
The Exception Model  
Exception Hierarchy  
Handling Multiple Exceptions  
raise  
assert  
Writing Your Own Exception Classes  
  
**8. Input/output and File Handling**   
Data Streams  
Creating Your Own Data Streams  
Access Modes  
Writing Data to a File  
Reading Data From a File  
Additional File Methods  
Using Pipes as Data Streams  
Handling IO Exceptions  
Working with Directories  
Metadata  
The pickle Module  
  
**9. Regular Expressions**  
Simple Character Matches  
Special Characters  
Character Classes  
Quantifiers  
The Dot Character  
Greedy Matches  
Grouping  
Matching at Beginning or End  
Match Objects  
Substituting  
Splitting a String  
Compiling Regular Expressions  
Flags

**Course Outline/Agenda**

This Advanced Python training course covers the following topics:

* Object Oriented Python
  + About OOP
  + The Class Statements
  + Class Inheritance
  + Classes as Objects
  + Using Dictionaries
  + Understanding self
  + Overriding Inherited Methods
  + More Inheritance
  + Operator Overloading (“magic” functions)
    - The \_\_iter\_\_ Method
    - The \_\_getitem\_\_ Method
  + Empty Classes For Storage
  + Pickling & Shelving Objects
  + Exercises
  + Multiple Inheritance

**Writing GUIs in Python**  
Introduction  
Components and Events  
The tk Widget  
Button Widgets  
Entry Widgets  
Text Widgets  
Checkbutton Widgets  
Radiobutton Widgets  
Listbox Widgets  
Frame Widgets  
Menu Widgets  
Toplevel Widgets  
Dialogs  
  
**4. Python and CGI Scripts**  
What is CGI  
HTML  
HTML Forms  
A Guestbook Application  
What Can Go Wrong!  
HTML Tables  
The CGI Script  
Rendering of the Script

* Python Generators
  + About Generators
  + Generator Syntax
  + Communicating with Generators with send()
  + Exercises
* Python Decorators
  + About Decorators
  + Simple Function Decorators
  + Classes as Decorators
  + Chained Decorators
  + Decorator Arguments
  + Exercises
* Sockets & Networking
  + Socket Basics
  + The Socket Module
    - Network Clients
  + Creating Network Servers
    - Example Server
  + Exercises
* Python Protocol Clients
  + Protocol Support
  + Exercises
* Generating & Sending Email
  + The email Module
  + Creating Simple Emails
  + Creating a Message
  + Creating SMTP Connections
  + SMTP Methods
  + Exercises
* Processes and Threads
  + Running Shell Commands
  + Popen Objects
  + Using Parallel Processing
  + Using Python's os.fork() Function
  + Using os.exec\*() Variants
  + Exercises
  + Python Threads
  + The threading Module
  + Thread Objects
  + Custom Thread Objects
  + Working with Locks
  + Using Reentrant Locks
  + Condition Objects
  + Exercises
  + Using the Queue Object
  + Using Semaphores
  + Using with for Locks, RLocks, Condition & Sempahores
  + Event Objects
  + Timer Objects
  + Processing Exit Codes
  + Exercises
  + The multiprocessing Module
  + Using multiprocessing
  + Exchanging Objects
  + Using Pipes
  + Synchronization
  + Using multiprocess Managers
* Signal Handling
  + The Signal Module
  + Defining Signal Handlers
  + Signal Numbers
  + Common Signal Module Functions
  + Using set\_wakeup\_fd()
  + Using Timers
  + Other Signal Notes
  + Exercises
* Introduction to Twisted
  + About Twisted
  + Installing Twisted
  + Twisted Basics
  + The Twisted Reactor
    - Using CallLater
  + Understanding Deferred Objects
  + Creating Deferred Objects
  + Stacking Callbacks
  + Stacking Deferred
  + What about concurrency?
    - Exercises
* Networking with Twisted
  + Networking Basics
  + Creating a ClientFactory
  + Twisted Failures
  + Protocol Objects
  + Creating Network Clients
  + Creating SSL Clients
  + SSL Context
  + Twisted Helpers
  + Twisted Protocol Support
  + Using Twisted SMTP Protocol Support
  + Twisted.mail.SMTP.sendmail() Explained
  + Mail Exchange Lookups with MXCalculator
  + Using the ESMTPSenderFactory
    - Example
  + More Factories
    - Exercises
* XML Processing
  + About XML
  + The ElementTree XML API
  + The Element Class
  + Using Elements
  + Creating New Elements
  + Xpath Style Queries
  + Creating & Saving XML Files

Web Development is one of the fastest growing careers in today’s economy with a projected 27% growth rate by 2024.\* Web developers earn a median salary of $64,970 and up to $116,620 per year.† Northwestern Coding Boot Camp was designed to help students to develop the skills and network needed to capitalize on this high-demand career track.