Python Web Development

Python refresher
- **Builtin data types**
- **Lists and tuples**
- **Dictionaries and sets**
- **Program structure**
- **Files and console I/O**
- **If statement**
- **for and while loops**

OS Services
- **The os and os.path modules**
- **Environment variables**
- **Launching external commands with subprocess**
- **Walking directory trees**
- **Paths, directories, and filenames**
- **Working with file systems**

Dates and Times
- **Basic date and time classes**
- **Different time formats**
- **Converting between formats**
- **Formatting dates and times**
- **Parsing date/time information**

Binary Data
- **What is Binary Data**
- **Binary vs text**
- **Using the Struct module**

Pythonic Programming
- **The Zen of Python**
- **Tuples**
- **Advanced unpacking**
- **Sorting**
- **Lambda functions**
- **List comprehensions**
- **Generator expressions**
- **String formatting**

Functions, modules, and packages
- **Four types of function parameters**
- **Four levels of name scoping**
- **Single/multi dispatch**
- **Relative imports**
- **Using __init__ effectively**
- **Documentation best practices**

Intermediate classes
• Class/static data and methods
• Inheritance (or composition)
• Abstract base classes
• Implementing protocols (context, iterator, etc.) with special methods

Metaprogramming
• Implicit properties
• globals() and locals()
• Working with object attributes
• The inspect module
• Callable classes
• Decorators
• Monkey patching

Developer Tools
• Analyzing programs with pylint
• Using the debugger
• Profiling code
• Testing speed with benchmarking

Unit testing with PyTest
• What is a unit test
• Writing tests
• Working with fixtures
• Test runners
• Mocking resources

Database access
• The DB API
• Available Interfaces
• Connecting to a server
• Creating and executing a cursor
• Fetching data
• Parameterized statements
• Using Metadata
• Transaction control
• ORMs and NoSQL overview

PyQt
• Overview
• Qt Architecture
• Using designer
• Standard widgets
• Event handling
• Extras

Network Programming
- **Built-in classes**
- **Using requests**
- **Grabbing web pages**
- **Sending email**
- **Working with binary data**
- **Consuming RESTful services**
- **Remote access (SSH)**

Multiprogramming
- **The threading module**
- **Sharing variables**
- **The queue module**
- **The multiprocessing module**
- **Creating pools**
- **About async programming**

Scripting for System Administration
- **Running external programs**
- **Parsing arguments**
- **Creating filters to read text files**
- **Logging**

Serializing data – XML and JSON
- **Working with XML**
- **XML modules in Python**
- **Getting started with ElementTree**
- **Parsing XML**
- **Updating an XML tree**
- **Creating a new document**
- **About JSON**
- **Reading JSON**
- **Writing JSON**
- **Reading/writing CSV files**
- **YAML, other formats as time permits**
- **Time Permitting Sessions**

Advanced data handling
- **Discover the collections module**
- **Use defaultdict, Counter, and namedtuple**
- **Create dataclasses**
- **Store data offline with pickle**

Type hinting
- **Annotate variables**
- **Learn what type hinting does NOT do**
- **Use the typing module for detailed type hints**
- **Understand union and optional types**
- **Write stub interfaces**