Advanced Python 3 for IC Design Engineers - Course Schedule

Day 1

Python Review
Data Types and Variables
Flow of Control
Functions
Lists, Tuples and Dictionaries
Files
Exceptions

Classes
Class variables and methods
Working with Properties
Special Class methods
Working with decorators

Writing and Maintaining your Own Python Library
Write your own iterators, generators and decorators
Test Driven Development – Unit Testing
Profiling
Managing builds and releases
Design patterns and When to Use them

Day 2

Working with JSON and XML
Navigating an XML document
Creating/editing XML
Accessing a web service
Processing JSON data
Searching XML and JSON data

Standard Data Formats
Working with Excel
Manipulating Word Documents
Working with Pdf's
Sending emails and Texts
Accessing HTML data with Beautiful Soup

Web Development
Web methods
Building a web application with Django

Regular Expressions
Creating expressions
Compilation
Multiple Matches
Options when searching

Multithreading

Creating Threads
Thread communication
Synchronisation
Locks
Other multithreading libraries

Networking

Using Sockets
TCP/IP
Python networking libraries

Day 3

Database Access

Accessing SQLLite Database
Querying database with parameters
Processing results
Inserting data

Numpy and Pandas

Sorting Arrays
Structured Data: NumPy's Structured Arrays
Data Manipulation with Pandas
Operating on Data in Pandas
Handling Missing Data
Hierarchical Indexing
Combining Datasets: Concat and Append
Combining Datasets: Merge and Join
Aggregation and Grouping
Pivot Tables
Vectorized String Operations
Working with Time Series
High-Performance Pandas: eval() and query()

MatplotLib and Seaborn

Histograms, Binnings, and Density
Customizing Plot Legends
Customizing Colorbars
Multiple Subplots
Text and Annotation
Customizing Ticks
Customizing Matplotlib: Configurations and Stylesheets
Three-Dimensional Plotting in Matplotlib

Python Advanced Data Analysis

Introducing Scikit-Learn
Predictive Analytics
Classifiers
Supervised and Unsupervised Learning
Machine Learning Techniques