Lesson Plan for Python Course

Week	Topics in Python	Detailed Discussion
Week 1	Python Installation, Pydev Installation, Anaconda Installation, Intro to programming in Python: line structure, Code indentation, Comments, Introduction to tokens, keywords, literals, Accepting input and displaying output, Introduction to IDLE	Basic Installation of Python on windows platform will be discussed. We will be using eclipse as the IDE. We will integrate PyDev with Eclipse. After making minor changes to the editor, we will be able to write and execute python programs inside Eclipse itself. Students will be introduced to a basic program in Python. They will be taught to indent their codes and use comments. We will finish the week with learning how to deal with console input and output
Week 2	Operators and Expressions: Different categories of operators, Operators and operands, Expression, Operator precedence, Introducing operator precedence by adding parenthesis	A number of new operators have been introduced in Python. We will learn about a handful of them in this module. Three operators will be studied later.
	Conditionals: if, if else, if else if ladder, nested conditionals, ternary operator equivalent	Conditionals in Python operate the exact same way as they do in C. The only difference is in the syntax. We will also see how the ternary operator has changed its appearance in Python.
Week 3	Loops: for loop, while loop, iterators, jump statements like break, continue, else & pass	All three loops in C have the same function and they can be swapped out for the other. Python developers decided to spice things up by giving different functionalities to each loop and by eliminating the "do while" loop altogether. The operations of break and continue remain the same.
Week 4	Lists, Tupples, Dictionaries	These three data strcutures are the game changers in Python. Lists are like arrays but with a lot more functionality added. Dictionaries are like hash tables. A considerable time will be spent on this module.
Week 5	Strings: String functions and string manipulations, Using the split() and strip() function	Strings are handled they same way as Java handles them, but Python allows for more liberal string handling. There are a plethora of functions which can help in processing of strings.
Week 6	Regular expressions: Introduction to regular expressions, Search with re, Replace with re, Reusing re	Another very useful feature of string matching. Python allows for Regular Expression checks and replacements.
Week 7	Revisit operators: Membership operators, Identity operators, Slice operator	We will wrap up the operators by studying these, since they are mostly operated on lists and string.
Week 8	Functions: Using a list of arguments, Using named arguments, Returning values from a function, Creating a sequence with a generator function	Functions behave the same way as in C. Few more functionalities have been included in Python. We should be able to wrap it up in a single class.

Week 9	File I/O: Opening a file, Different modes of operation of a file, Reading writing text files, Reading and writing binary files	File read and write in Python are handled extremely smoothly. There are options to read a single line from a file or read the content of the entire file at one go. Python allows not only alows for string read and write but also allows to dump the contents of a data structure and retreive it later without having to change it to string.
Week 10	Parsing: Introduction to parsing, Line-text parsing, Block-text parsing, Log parsing	We will study the different tyoes of parsing offered by Python
Week 11	Exception handling: How exception works, Different types of exceptions, Handling exceptions, Raising exceptions	Exception handling is quite the same like Java. Python has less to offer here.
Week 12	Databases: Creating a database connection with MySQL, CRUD with Python	One of the most pertinent reasons of shifting to python is because of the ease with which it can connect to a multitude of Databases
Week 13	Object oriented programming: Introduction to classes, Using methods, Using object data, Understanding inheritance, Applying Polymorphism to classes	Python also allows for OOP. We will discuss more about this in the class
Week 14	Using modules: Using a standard library module, Finding 3rd party modules, Creating a module	Here we will study how we can write a module in Python and include it in our project.
Week 15	Internet connectivity: Submitting data to a form from python program, Sending text emails through a python program, Sending emails with files attached through a python program, Reading email from a python program	Another major reason of using Python. Python allows us to connect to the internet, download files, submit forms, login into emails and a host of other things.
Week 16	Statistics with Python: Learning numpy and scipy	Two modules help a lot to perform huge number of operations in statistics. We will take them up and see how they make our work very easy.
Week 17	Graphics with python: Using modules to construct different types of graphs like line graph, pie chart etc.	Displaying graphs have never been easier. Using matplotlib, one can draw several types of graphs without any trouble.
Week 18	Creating and dealing with mathematical Graphs in Python using Networkx	Almost all facets of life try to model their problem using mathematics. Graphs can be a very good choice to epresent relationships. But the trouble arises when a new node or a new edge has to be added to an existing graph. Networkx gracefully handles such insertions and deletions and paves the way for a smoother and more enriched set of operations.
Week 19	Drawing in Python	Python allows to create a canvas element on which one can draw and use it as a paint
Week 20	Animation in Python	Animations is another feature of python which has gained prominence in the recent years. As fas as this module is concerned we will very quickly review the

		basics of animation because lets face it we live in a world with flash in it!!!!