Python - Training Plan - - Semester 5 & 6

Module #	Module Name	Topic	Sub Topic	Level
1.0	Introduction	Introduction to Python	History of Python	Fundamental
			Features of Python	Fundamental
		Python 2 vs Python 3	which one to start with? Python 2 or Python 3	Fundamental
			Why we should start with Python 3	Fundamental
		Why the demand python is very high ?	Factors responsible for why python is preferred	Fundamental
2.0	Variables and DataTypes	Variables	Naming Convention	Fundamental
			Scope of a variable	Fundamental
		Datatypes	Integer	Fundamental
			Floating Point Numbers	Fundamental
			Boolean	Fundamental
			String	Fundamental
			Complex Numbers	Fundamental
3.0	Operators	Arithmetic Operators	Addition	Fundamental
			Subtraction	Fundamental
			Multiplication	Fundamental
			Division	Fundamental
			Floor Division	Fundamental
			Exponent	Fundamental
			Modulus	Fundamental
		Comparison Operator	"==" operator	Fundamental
			!= to operator	Fundamental
			<> Operator	Fundamental
			> Operator	Fundamental
			< Operator	Fundamental
			>= Operator	Fundamental
			<= Operator	Fundamental
		Assignment Operator	"=" Operator	Fundamental
			"+=" Operator	Fundamental
			"-=" Operator	Fundamental
			"*=" Operator	Fundamental
			"/=" Operator	Fundamental
			"%=" Operator	Fundamental
			"**=" Operator	Fundamental
			"//=" Operator	Fundamental
		Bitwise Operator	& Binary AND Operator	Fundamental
			| Binary OR Operator	Fundamental
			^ Binary XOR Operator	Fundamental
			~ Binary ones Complement Operator	Fundamental
			<< Binary Left Shift Operator	Fundamental
			>> Binary Right Shift Operator	Fundamental
		Logical Operator	and Logical Operator	Fundamental
			or Logical Operator	Fundamental
			not Logical Operator	Fundamental
		Membership Operator	in Operator	Fundamental
			not in operator	Fundamental
		Identity Operator	is Operator	Fundamental
			is not Operator	Fundamental
		Operator Precedence	List of all Operators according to Precedence	Fundamental
4.0	Python Statements	Conditional Statement	if statement	Fundamental
			if elif else statement	Fundamental
		Control Statement	Break and Continue	Fundamental
5.0	Looping	For Loop	For loop using range function	Intermediate
			For loop using iterator	Intermediate
		While loop	While loop syntax	Intermediate
6.0	Strings	Operations	Concatenation	Intermediate
			Replication	Intermediate
			Slicing	Intermediate
		In-built Functions	lower() , upper() , capitalize() , title() , swapcase()	Intermediate
			islower() , isupper() , istitle()	Intermediate
			strip() , lstrip() , rstrip()	Intermediate
			isalpha() , isnumeric , isdigit() , isdecimal()	Intermediate
			center() , ljust() , rjust()	Intermediate
			count() , encode() , startswith() , endswith()	Intermediate
			find() , index() , rindex(), split()	Intermediate
7.0	List	Operations	Concatenation	Intermediate
			Replication	Intermediate

			Slicing	Intermediate
		In-built Functions	cmp(), len(),max(),min(),list()	Intermediate
			list.append(), list.count(), list.extend(),list.index()	Intermediate
			list.insert(), list.pop(), list.remove(), list.reverse(), list.sort()	Intermediate
			reversed(),sorted()	Intermediate
8.0	Tuple	Operations	Concatenation	Intermediate
			Replication	Intermediate
			Slicing	Intermediate
		In-built Functions	cmp(), len(),max(),min(),tuple()	Intermediate
			sorted(), reversed(),tuple.count(), tuple.index()	Intermediate
9.0	Dictionary	Keys	Which type of data can be made key	Intermediate
		In-built Functions	cmp(), str() , len() , type()	Intermediate
			dict.clear(), dict.copy(), dict.fromkeys(), dict.key()	Intermediate
			dict.has_key() , dict.items(), dict.keys(), dict.setdefault()	Intermediate
			dict.values(), dict.update()	Intermediate
10.0	Sets	Operations	Intersection	Intermediate
			Union	Intermediate
			difference	Intermediate
			Symmetric_difference	Intermediate
		In-built Functions	add()	Intermediate
			clear()	Intermediate
11.0	Functions	Arguments	Required arguments	Advanced
			Keyword arguments	Advanced
			Default arguments	Advanced
			Variable-length arguments	Advanced
		Variables	Local Variable	Advanced
			Global Variable	Advanced
		Misc	Print Function with format function	Advanced
			lambda Function	Advanced
		Higher Order Functions	map	Advanced
			filter	Advanced
			reduce	Advanced
12.0	Object Oriented Programming	Introduction	class, class variable, Data Member	Expert
			Object	Expert
			Instance	Expert
			Methods	Expert
			Attributes	Expert
			Object Instantiation	Expert
		Abstraction	Encapsulation	Expert
			Abstraction	Expert
		Polymorphism	Operator Overloading	Expert
			Operator Overriding	Expert
		Inheritence	Single Inheritence	Expert
			Multiple Inheritence	Expert
			Multilevel Inheritence	Expert
13.0	Database Management System	Operations	Creating Database, Insert Operation	Expert
			Write Operation, Update Operation, Delete Operation	Expert
			Normalisation	Expert
		MySQL	select and where clause	Expert
			insert	Expert
			orderby	Expert
			Join	Expert
			Association	Expert
		MongoDB	select and where clause	Expert
			insert	Expert
			orderby	Expert
			Join	Expert
			Association	Expert
14.0	Modules	Regular Expression	Meta Characters	Expert
			Special Sequences	Expert
			Sets	Expert
			findall() function	Expert
			search,split	Expert
			sub, match object	Expert
15.0	Exceptional Handling	Exceptions	try block	Expert
			except	Expert
			finally	Expert
			Raising a Exception	Expert
16.0	DataStructures	List Data Structure-Introduction	List using Array - Operations	Expert
			List using Linked List - Introduction	Expert
			List using Linked List - Operations	Expert
			List using Array versus List using Linked List	Expert
		Stack	Stack Operations	Expert

			Stack Applications	Expert
		Queue-Introduction	Queue Operations	Expert
		Non-Linear Data Structures-Introduction	Graphs	Expert
			Trees	Expert
		Hashing and Hash Table-Introduction	Hashing & Hash Table	Expert
17.0	Algorithms	Dynamic Programming	Longest Palindromic Subsequence	Expert
			Longest Common Subsequence	Expert
			Longest Common Substring	Expert
			Largest kxk submatrix with all entries 1	Expert
			Longest Increasing Subsequence	Expert
			Largest Area Histogram	Expert
			Subset Sum	Expert
			0/1 KnapSack Problem	Expert
			The Coin Change Problem	Expert
		Greedy Algorithms	N Queen Problem	Expert
			The Knight's Tour Problem	Expert
			Subset Sum	Expert
			Activity Selection problem	Expert
			Egyptian Fraction	Expert
			Job Sequencing Problem	Expert
			Huffman Coding	Expert
			Huffman Decoding	Expert
		Graph Algorithm	Adjacency Matrix	Expert
			Adjacency List	Expert
			Depth First Search	Expert
			Breadth First Search	Expert
			Peterson Graph Problem	Expert
			Minimum Spanning Tree - Kruskal	Expert
			Minimum Spanning Tree - Prims	Expert
		Searching Algorithm	Linear Search	Expert
			Binary Search	Expert
			ternary Search	Expert
			Jump Search	Expert
			Exponential Search	Expert
			Interpolation Search	Expert
		Sorting Algorithm	Bubble Sorting	Expert
			Insertion Sorting	Expert
			Selection Sorting	Expert
			Quick Sorting	Expert
			Merge Sorting	Expert
		Number Theory	GCD and LCM	Expert
			Prime Factorization and Divisors	Expert
			Fibinocci Numbers	Expert
			Catalan Numbers	Expert
			Modular Arithmetic	Expert
			Euler Totient Function	Expert
			ncr computations	Expert
			Chinese Remainder Theorem	Expert
			Factorial	Expert
			Prime Numbers and Primality Test	Expert
			Sieve Algorithms	Expert
		Network Flow Algorithm	Ford-Fulkerson Algorithm for Maximum Flow Problem	Expert
			Dinic's Algorithms	Expert
			Hungarian Problem	Expert
			Hopcroft-Karp Algorithm	Expert