SEMESTER VI

Course Code	USA20601J	Course Name	PYTHON PROGRAMMING	Course Category	C	Professional Core Course	L	T	P	C
							4	0	4	6

Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil
Course Offering Department	Computer Applications	Data Book / Codes/Standards	Nil		

Course Learning Rationale (CLR):	The purpose of learning this course is to:
CLR-1 :	Describe the core syntax and semantics of Python programming language.
CLR-2 :	Discover the need for working with the strings and functions.
CLR-3 :	Illustrate the process of structuring the data using lists, dictionaries, tuples and sets.
CLR-4 :	Indicate the use of regular expressions and built-in functions to navigate the file system.
CLR-5 :	Infer the Object-oriented Programming concepts in Python.
CLR-6 :	Understand Event Driven Programming

Course Learning Outcomes (CLO):	At the end of this course, learners will be able to:	Learning		
		1	2	3
		Level of Thinking (Bloom)	Expected Proficiency (%)	Expected Attainment (%)
CLO-1 :	Develop, document, and debug modular python programs to solve computational problems	3	80	70
CLO-2 :	Select a suitable programming construct and data structure for a situation.	3	85	75
CLO-3 :	Use built-in strings, lists, sets, tuples and dictionary in applications.	3	75	70
CLO-4 :	Define classes and use them in applications	3	85	80
CLO-5 :	Use files for I/O operations.	3	85	75

Program Learning Outcomes (PLO)														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Fundamental Knowledge	Application of Concepts	Link with Related Disciplines	Procedural Knowledge	Skills in Specialization	Ability to Utilize Knowledge	Skills in Modeling	Analyze, Interpret Data	Investigative Skills	Problem Solving Skills	Communication Skills	Analytical Skills	ICT Skills	Professional Behavior	Life Long Learning
L	H	-	H	L	-	-	H	L	L	-	H	-	-	H
M	H	L	M	L	-	-	H	M	L	-	H	-	-	H
M	H	M	H	L	-	-	H	M	L	-	H	-	-	H
M	H	M	H	L	-	-	H	M	L	-	H	-	-	H
H	H	M	H	L	-	-	H	M	L	-	H	-	-	H

Duration (hour)		24	24	24	24	24
S-1	SLO-1	An introduction to python programming	The Structure of Strings	Introduction to Lists	Introduction to function	Introduction to classes
	SLO-2	Structure of a Python program	The Subscript Operator	List literals	Functions as Abstraction Mechanisms	Design with Classes
S-2	SLO-1	understanding Python interpreter	Program using subscript operator	Basic list operators	Functions Eliminate Redundancy	Objects and Classes
	SLO-2	understanding Python Shell	Slicing for Substrings	Replacing an Element in a List	Functions Hide Complexity	An example for class
S-3	SLO-1	Datatypes	Program for slicing substrings	Replacing an Element in a List	Functions Support General Methods with Systematic Variations	Docstrings
	SLO-2	Example program using all data types	Testing for a Substring with the in Operator	Example program to Replace an Element in a List	Functions Support the Division of Labor	Method Definitions
S-4	SLO-1	String literals	Program using substring	List Methods for Inserting Elements	Defining a Recursive Function	The init Method
	SLO-2	Escape Sequences	The Positional System for Representing Numbers	Program to List Methods for Inserting Elements	Tracing a Recursive Function	Instance Variables

S 5-8	SLO-1 SLO-2	Lab 1: *Write a Python code to display system information usingpywhois*	Lab 4:Make a simple calculator	Lab 7: *Program to Transpose a Matrix* *Program to List Methods for Inserting Elements*	Lab 10: Program using recursive function	Lab 13: Program using classes and methods
S-9	SLO-1	*String Concatenation*	*Converting binary to decimal*	*List Methods for Removing Elements*	*Using Recursive Definitions to Construct Recursive Functions*	*The str Method*
	SLO-2	*Variables and the assignment statement*	*Program to convert binary to decimal*	*Searching a List*	*Recursion in Sentence Structure*	*Accessors*
S-10	SLO-1	*Example program using variables*	*Converting decimal to binary*	*Sorting a List*	*Infinite Recursion*	*Mutators*
	SLO-2	*Program Comments and Doc Strings*	*Program to convert decimal to binary*	*Mutator Methods*	*The Costs and Benefits of Recursion*	*The Lifetime of Objects*
S-11	SLO-1	*Numerical Datatypes*	*String Methods*	*Aliasing*	*Managing a Program's Namespace*	*Rules for Defining a Simple Class*
	SLO-2	*Character sets*	*Program using string method*	*Aliasing side effects*	*Module Variables, Parameters, and Temporary Variables*	*Rational Number Arithmetic and Operator Overloading*
S-12	SLO-1	*Arithmetic expressions*	*Octal and Hexadecimal Numbers*	*Equality: Object Identity*	*Scope*	*Comparison Methods*
	SLO-2	*Understanding error messages*	*Text Files and Their Format*	*Structural Equivalence*	*Lifetime*	*Equality and the eq Method*
S 13-16	SLO-1 SLO-2	*Lab 2: The Magic 8 Ball is a toy used for fortune-telling or seeking advice.*	*Lab 5: Find the Factorial of a Number* *Python Program to Convert Decimal to Binary, Octal and Hexadecimal*	Lab 8: *Using a List to Find the Median of a Set of Numbers* *Program using sorting and searching*	Lab 11: *Write the code for a mapping that generates a list of the absolute values of the numbers in a list named numbers.*	Lab 14: *Python Program for Operator overloading*
S-17	SLO-1	*Logical operators*	*Writing Text to a File*	Tuples	*Default (Keyword) Arguments*	*Using pickle for Permanent Storage of Objects*
	SLO-2	*Definite iteration : For loop*	*Writing Numbers to a File*	Creation of several tuples	*Functions as First-Class Data Objects*	*Input of Objects and the try-except Statement*
S-18	SLO-1	*Example program using for loop*	*Reading Text from a File*	*Dictionaries*	*Mapping*	*Inheritance Hierarchies and Modeling*
	SLO-2	*Formatting text for output*	*Reading Numbers from a File*	*Dictionary Literals*	*Filtering*	*Polymorphic Methods*
S-19	SLO-1	*Selection : if and if else statement*	*Example program to read and write text and numbers*	*Adding Keys and Replacing Values*	*Reducing*	*Abstract Classes*
	SLO-2	*Example program using if and if else*	*Accessing Files and Directories on Disk*	*Accessing Values*	*Using lambda to Create Anonymous Functions*	*The Costs and Benefits of Object-Oriented Programming*
S-20	SLO-1	*Conditional iteration :while loop*	*Manipulating Files and Directories on Disk*	*Removing Keys*	*Creating Jump Tables*	*Event-Driven Programming*
	SLO-2	*Example program using while loop*	*Example program to access and manipulate files*	*Traversing a Dictionary*	*Example program using functions*	*Example for Event-Driven Programming*
S 21-24	SLO-1 SLO-2	Lab 3: Check whether a number is prime or not, *Python Program to Generate a Random Number*	*Lab 6: Program to read and write text and numbers*	Lab 9: *When the user enters a statement, the program responds in one of two ways: 1 With a randomly chosen hedge, such as "Please tell me more." 2 By changing some key words in the user's input string and*	Lab 12: *Write the code for a filtering that generates a list of the positive numbers in a list named numbers. You should use a lambda to create the auxiliary function.*	Lab 15: Program using polymorphism, abstract classes

				appending this string to a randomly chosen qualifier. Thus, to "My teacher always plays favorites," the program might reply, "Why do you say that your teacher always plays favorites?"		

Learning Resources	*Kenneth A. Lambert, (2011), "The Fundamentals of Python: First Programs", Cengage Learning*

Learning Assessment

Level	Bloom's Level of Thinking	Continuous Learning Assessment (50% weightage)								Final Examination (50% weightage)	
		CLA – 1 (10%)		CLA – 2 (10%)		CLA – 3 (20%)		CLA – 4 (10%)#			
		Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice
Level 1	Remember	20%	20%	15%	15%	15%	15%	15%	15%	15%	15%
	Understand										
Level 2	Apply	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Analyze										
Level 3	Evaluate	10%	10%	15%	15%	15%	15%	15%	15%	15%	15%
	Create										
	Total	100 %		100 %		100 %		100 %		100 %	

CLA – 4 can be from any combination of these: Assignments, Seminars, Short Talks, Mini-Projects, Case-Studies, Self-Study, MOOCs, Certifications, Conf. Paper etc.,

Course Designers

Experts from Industry	Experts from Higher Technical Institutions	Internal Experts
Mr.G.Muruganandam, Group Project Manager, HCL Technologies, Chennai	*Dr.S.Gopinathan, Professor, University of Madras, Chennai*	*Mrs. M.Ramla, SRM IST*
Mr.M. Hemachandar, Tech Lead, Wipro Limited, Chennai		*Mrs. Anita Jasmine, SRM IST*