19BSM406- Programming with Python										
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	--	2	-	5	25	50	25	--	--	100

OBJECTIVES

1. To develop applications using the Python Programming language by understanding various data structures available in Python programming language and apply them in solving computational problems
2. Able to test and debug codes written in Python and would be able to draw different kinds of plots using PyLab for scientific research

SYLLABUS

Unit-I	**10**

Introduction to Python: The basic elements of Python, Branching programs, Strings and Input, Iteration **Functions, Scoping and Abstraction:** Functions and Scoping, Specifications, Recursion, Global variables, Modules, Files **Testing and Debugging:** Testing, Debugging

UNIT II	**10**

Structured Types, Mutability and Higher-order Functions: Tuples, Lists and Mutability, Functions as Objects, Strings, Tuples and Lists, Dictionaries
Exceptions and assertions: Handling exceptions, Exceptions as a control flow mechanism, Assertions

UNIT III	**10**

Classes and Object-oriented Programming: Abstract Data Types and Classes, Inheritance, Encapsulation and information hiding
Some Simple Algorithms and Data Structures: Search Algorithms, Sorting Algorithms, Hashtables

UNIT IV	**9**

Plotting and more about Classes: Plotting using PyLab, Plotting mortgages and extended examples
Dynamic Programming: Fibonacci sequence revisited, Dynamic programming and the 0/1 Knapsack algorithm, Dynamic programming and divide and conquer

APPROXIMATE TOTAL	**39 Hours**

OUTCOMES

1. Understand the basic concept of programming with python.
2. To develop know-how in creating applications using the Python Programming language
3. To be able to understand the various data structures available in Python programming language and apply them in solving computational problems.
4. Ability to create robust applications for solving computational problems using the Python

programming language

5. Ability to test and debug applications written using the Python programming language.
6. To be able to draw different kinds of plots using PyLab and generating series

TEXTS AND REFERENCES

1. John V Guttag. “Introduction to Computation and Programming Using Python”, Prentice Hall of India
2. Allen Downey, Jeffrey Elkner and Chris Meyers "How to think like a Computer Scientist, Learning with Python", Green Tea Press
3. Swaroop C H. "A Byte of Python", http://www.swaroopch.com/notes/python
4. "Python Programming", http://en.wikibooks.org/wiki/Python_Programming
5. "The Python Tutorial", http://docs.python.org/release/3.0.1/tutorial/
6. "Learn Python the Hard way", http://learnpythonthehardway.org/