

Course No.	Course Name	L-T-P Credits	Year of Introduction
RLIMCA369	Elective II- Python Programming	3-1-0-4	2016
Course Objectives			
<ul style="list-style-type: none"> • To develop proficiency in the Python Programming Language. • To be able to understand the various data structures available in Python programming • To be able to do testing and debugging of code written in Python. • To implement OOPs concept using Python • To be able to develop web based applications using Python 			
Syllabus			
Introduction to Python, Data Types and Operations, Decision Making, Functions, Modules & Packages, File Handling, Object Oriented Programming, Exception Handling and Regular Expressions, Database Programming, GUI Programming, Web Development and Web Frameworks.			
Expected Outcome			
<ul style="list-style-type: none"> • Ability to design algorithmic solution to problems. • Ability to convert algorithms to Python programs. • Ability to design modular Python programs using functions. 			
References			
<ol style="list-style-type: none"> 1. Wesley J. Chun, “Core Python Applications Programming”, 3rd Edition , Pearson Education, 2016 2. Charles Dierbach, “Introduction to Computer Science using Python”, Wiley, 2015 3. Jeeva Jose & P.SojanLal, “Introduction to Computing and Problem Solving with PYTHON”, Khanna Publishers, New Delhi, 2016 4. Downey, A. et al., "How to think like a Computer Scientist: Learning with Python", John Wiley, 2015 			
Suggested MOOC			
<ol style="list-style-type: none"> 1. https://archive.org/details/MIT6.00SCS11 2. https://www.coursera.org/course/pythonlearn 3. http://www.learnerstv.com/Free-Computer-Science-Video-lectures-ltv163-Page1.htm 4. https://www.coursera.org/learn/python-databases 			

Course Plan			
Module	Contents	Hours Allotted	% of marks in End-Semester Examination
I	Introduction to Python: Features of Python, How to Run Python, Identifiers, Reserved Keywords, Variables, Input, Output and Import Functions, Operators Data Types: Numbers, Strings, List, Tuple, Set, Dictionary, Data Type Conversions. Decision Making, Loops, Nested Loops, Control Statements, Types of Loops	8	15%
II	Function Definition, Function calling, Function arguments, Lambda Functions, Recursive Functions Modules & Packages: Creating Modules, import Statement, Locating Modules, Namespaces and Scope, Packages, Date and Time Modules. Exception Handling: Built-in Exceptions, Handling Exceptions, Exception with arguments, Raising an Exception, User-defined Exception, Assertions in Python.	9	15%
FIRST INTERNAL EXAM			
III	File Handling, Object Oriented Programming: Class definition, Creating objects, Encapsulation, Data hiding, Inheritance, Method overriding, Polymorphism.	8	20%
IV	Regular expressions: Introduction, match() function, search() function, search and replace, regular expression modifiers, regular expression patterns, Character classes, special character classes, repetition cases, findall() method, compile() method. Database Programming: Connecting to a database, Creating Tables, INSERT, UPDATE, DELETE and READ operations, Transaction Control, Disconnecting from a database, Exception Handling in Databases	9	20%
V	GUI Programming: Tkinter introduction, Tkinter and Python Programming, Tk Widgets, Tkinter examples Web Development: Python Web clients tools, Web Clients, Web Servers, Web Services.	8	15%
SECOND INTERNAL EXAM			

VI	<p>Web Frameworks : Introduction to Django, Projects and Apps in Django, The Python Application Shell, The Django Administration App, Creating an App using Django.</p> <p>Introduction to SciPy (https://www.scipy.org), NumPy (http://www.numpy.org), matplotlib (https://matplotlib.org).</p> <p>A micro project/programming assignment should be given as part of the course.</p> <p>Assignments may be given in machine learning using resources available at scikit-learn.org.</p> <p>Note : Python may be taught effectively using <i>IPython</i> (https://ipython.org) using Jupiter notebook, which provides an interactive web based platform for programming.</p>	9	15%
	END SEMESTER EXAM		
	QUESTION PAPER PATTERN		
	<p>There will be two parts in the Question paper - Part A and Part B.</p> <p>Part A will have 8 short answer questions of 3 marks each (8 X 3 M = 24 M). There will be no choice questions.</p> <p>Part B will have 6 essay questions one from each module of 6 marks each, with an alternative choice question from the same module (6 x 6M=36M).The maximum number of sub part questions in Part B to be limited to 2.</p> <p>The total marks assigned to questions in Part A (Short answer) and Part B (Essay) together from a single module, not to exceed the marks assigned to that module specified in the course plan in the syllabus.</p>		