

# GUJARAT TECHNOLOGICAL UNIVERSITY

## Master in Computer Application (Integrated MCA)

### Year IV – (Semester-VIII) (W.E.F. December 2016)

**Subject Name:** Advanced Python

**Subject Code:** 4480606

#### 1. Learning Objectives:

- To be able to understand the various regular expressions available in Python programming language and apply them
- To understand the advanced concepts of text processing, database programming, multithreading and extension
- To understand the concept of Web application development
- To be able to use extension for creating applications
- To understand python based web application framework like Django

#### 2. Prerequisites: Basic Python Programming

#### 3. Contents:

Unit No.	Course Content	%age	No of Lectures
1	<p><b>Regular Expressions and Text Processing</b></p> <p><b>Regular Expressions:</b> Special Symbols and Characters, Regexes and Python, A Longer Regex example (like Data Generators, matching a string etc.)</p> <p><b>Text Processing:</b> Comma Sepearated values,JavaScript Object Notation (JSON),Python and XML</p> <p><b>Case Study:</b> Create Regular expressions ( Custom), Process telephone numbers, Generate log data, HTML Generators, Tweet Scrub, Amazone ScreenScrapper, Mailmerge</p>	20%	7
2	<p><b>Advanced Python Programming</b></p> <p><b>Multithreded Programming :</b> Threads and Pythong, Thread and threading module, Single thread and Multithreaded execution, Multithreading example.</p> <p><b>Database Programming:</b> Databases and Python, The Python DB-API, Python and ORMs, Non- Relational Databases</p> <p><b>Module Extension:</b> Extending Python by writing extensions</p>	25%	9

	<b>Case Study: Create Library/Module for Language Processing</b>		
<b>3</b>	<b>Web Development</b>  <b>Web Clients and Servers;</b> Python web Client tools, Web ( HTTP) servers and Related Modules  <b>Web Application Programming:</b> Helping web servers processing client data, Building CGI applications (Creating form page, Generating Result Page, Fully interactive web sites) Advanced CGI ( like Multi part form submission, File upload, Cookies), Introduction to WSGI, Real world Web development  <b>Web Services:</b> Web services, Microblogging with twitter  <b>Case Study:</b> Create web service for web application	<b>25%</b>	<b>10</b>
<b>4</b>	<b>Python and Data Analytics</b>  Understand the problem By Understanding the Data  Predictive Model Building: Balancing Performance, Complexity, and the Big Data	<b>20%</b>	<b>10</b>
<b>5</b>	<b>Web Framework : Django</b>	<b>10%</b>	<b>4</b>

#### 4. Text Book(s):

1. Wesley J Chun, Core Python Applications Programming, 3<sup>rd</sup> Edition.Pearson
2. Michael Bowles, Machine Learning in Python, Essential techniques for predictive analysis, Wiley

#### 5. Suggested Additional Reading:

1. Mark Pilgrim, Dive into Python: Python Novice to pro (source: <http://diveintopython.org/>.)
2. Alex Martelli, Python Cookbook, O'REILLY
3. Luke Sneeringer, Professional Python, WROX
4. Laura Cassell, Python Projects, WROX
5. Shai Vaingast, Beginning Python Visualization , Crafting Visual Transformation Scripts, APress

#### Web Resources

1. <http://docs.python.org/library/csv>
2. <http://docs.python.org/library/json>
3. <http://docs.python.org/library/ext>
4. [http://en.wikibooks.org/wiki/Python\\_Programming](http://en.wikibooks.org/wiki/Python_Programming)
5. <http://learnpythonthehardway.org/>
6. <http://jason.org>
7. [Nosql-database.org](http://Nosql-database.org)
8. [www.mongodb.org/](http://www.mongodb.org/)

## 6. Chapter wise Coverage from Main Reference Book(s):

Unit	Book#	Topics
1	1	Chapter 1, 2
2	1	Chapter 4.3 to 4.10, 6, 8
3	1	Chapter 9.2 to 9.6, 10,11
4	2	Chapter 2,3
5	1	Chapter 12

**Note:** Seminar can be conducted to cover

- 1) Decorators in Python
- 2) GUI Programming using Tkinter

## 7. Suggestions for Laboratory Sessions:

As per Practical List,

## 8. Accomplishments

Students will understand advanced programming concept of Python programming like Text processing, web application development, multithreading and machine learning.