

 SANKALCHAND PATEL UNIVERSITY ॥ अथातो ज्ञानजिज्ञासा ॥	Faculty of Engineering and Technology Master of Technology (Semester II / First year) In Effect from Academic Year 2023-24
--	---

Branch Name:	CYBER SECURITY
Program Code:	ET207
Course Title:	Code Review and Scripting using Python Practical
Course Code:	2ET2070203P
Pre-requisite Course:	To acquire knowledge in Python and R programming.

Course Objectives:

To develop Python programs with conditionals and loops and data structures. Acquire skills to apply data analysis methods to a problem.

Teaching and Examination Scheme:

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								
					Theory (Marks)				Practical (Marks)				Total (Marks)
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
1	-	-	2	2	-	-	-	-	10	25	10	25	50

Course Contents:

Unit	Details	Contact Hours
1	1. Install Python Interpreter and use it to perform different Mathematical Computations. Try to do all the operations present in a Scientific Calculator 2. Using turtles concept draw a wheel of your choice 3. Write a program that draws Archimedean Spiral 4. The letters of the alphabet can be constructed from a moderate number of basic elements, like vertical and horizontal lines and a few curves. Design an alphabet that can be drawn with a minimal number of basic elements and then write functions that draw the letters. The alphabet can belong to any Natural language excluding English. You should consider at least Ten letters of the alphabet.	8
2	1. The time module provides a function, also named time that returns the current Greenwich Mean Time in “the epoch”, which is an arbitrary time used as a reference point. On UNIX systems, the epoch is 1 January 1970. >>> import time >>> time. time() 1437746094.5735958 Write a script that reads the current time and converts it to a time of day in hours, minutes, and seconds, plus the number of days since the epoch 2. Given $n+r+1 \leq 2r$. n is the input and r is to be determined. Write a program which computes minimum value of r that satisfies the above. 3. Write a program that evaluates Ackermann function	6

3	1. Choose any five built-in string functions of C language. Implement them on your own in Python. You should not use string related Python built-in functions. 2. Given a text of characters, Write a program which counts number of vowels, consonants and special characters. 3. Given rows of text, write it in the form of columns. 4. Given a page of text. Count the number of occurrences of each letter (Assume case insensitivity and don't consider special characters). Draw a histogram to represent the same	6
4	1. Write a program that reads a file, breaks each line into words, strips whitespace and punctuation from the words, and converts them to lowercase. 2. Go to Project Gutenberg (http://gutenberg.org) and download your favorite out-of copyright book in plain text format. Read the book you downloaded, skip over the header information at the beginning of the file, and process the rest of the words as before. Then modify the program to count the total number of words in the book, and the number of times each word is used. Print the number of different words used in the book. Compare different books by different authors, written in different eras. 3. Given a word which is a string of characters. Given an integer say 'n', Rotate each character by 'n' positions and print it. Note that 'n' can be positive or negative. 4. Go to Project Gutenberg (http://gutenberg.org) and download your favorite out-of copyright book in plain text format. Write a program that allows you to replace words, insert words and delete words from the file	6
5	1. Write a program to compute summary statistics such as mean, median, mode, standard deviation and variance of the given different types of data. 2. Write a script named copyfile.py. This script should prompt the user for the names of two text files. The contents of the first file should be the input that to be written to the second file. 3. Consider all the files on your PC. Write a program which checks for duplicate files in your PC and displays their location. Hint: If two files have the same checksum, they probably have the same contents. 4. Write a program to demonstrate a) arrays b) array indexing such as slicing, integer array indexing and Boolean array indexing along with their basic operations in NumPy	6

Reference Books:

1. Peter Wentworth, Jeffrey Elkner, Allen B. Downey and Chris Meyers, "How to Think Like a Computer Scientist: Learning with Python 3", 3rd edition, Available at <http://www.ict.ru.ac.za/Resources/cspw/thinkcspy3/thinkcspy3.pdf>
2. Paul Barry, "Head First Python a Brain Friendly Guide" 2nd Edition, O'Reilly, 2016
3. Dainel Y.Chen "Pandas for Everyone Python Data Analysis" Pearson Education, 2019

Course Outcomes:

At the end of the course, students will be able to:

Course Outcomes	Description	Bloom's Taxonomy Level
CO1	Describe the Numbers, Math functions, and Dictionaries in Python	Understanding (2)
CO2	Interpret Object oriented programming in Python	Understanding (2)
CO3	Apply a solution clearly and accurately in a program using Python.	Applying (3)
CO4	Describe the Strings, List, Tuples in Python	Applying (3)

CO5	Applying solutions in NumPy.	
-----	------------------------------	--

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)			
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3	PS O4
CLO1	H	M	M		M											
CLO2	H	M			M							L				
CLO3	H	M	M		M											
CLO4	M	M	M		M							L				

H: High, M: Medium, L: Low