Scheme of B.Sc.-IT (Information Technology)

Year	Course Code	Subject Name	Theory/ Total Practical Credit		Total Marks	
					Max	Mir
	BSCIT-1T	Computer Fundamental and Operating System	Theory	4	50	17
First	BSCIT-2T	Programming with C and C++	Theory	4	50	17
	BSCIT-1P	LAB 1: Programming with C and C++	Practical	2	50	17
	BSCIT-3T	Data Communication and Networking	Theory	4	50	17
Second	BSCIT-4T	Web Technology and Java	Theory	4	50	17
	BSCIT-2P	LAB 2: Web Technology and Java	Practical	2	50	17
	BSCIT-5T	Data Structure	Theory	4	50	17
Third	BSCIT-6T	Python Programming	Theory	4	50	17
	BSCIT-3P	LAB 3: Python Programming	Practical	2	50	17
		Total		30	450	

Note: There shall be four extra credits in all the years of under graduation for internship/apprenticeship. The certificate of extra credits would be provided by the concern university and is not mandatory.



	Part A: Introduction							
	Pro	gram: Degree Course		Class: B.ScIT III Year	Year: 2022	Session: 2022-2023		
Co. Internation of Co.	1	Course Code		BSCI	T-3P			
Accommon management	2	Course Title						
	3	Course Type		Prac	tical			
Account Account Accounts	4	Pre-requisite (if any)	Theoretical knowledge of python.					
	5	Outcomes (CLO)	 At the end of course, Students will be able to Learn the Numbers, Math functions, Strings, List in Python. Learn the tuples and dictionaries in Python. Demonstrate proficiency in handling of loops and creation of functions. Identify the methods to create and manipulate lists, tuples ar dictionaries. Express different Decision-Making statements and Functions. 					
	6	Credit Value			ical: 2			
7 Total Marks Max. Marks: 50 Min Passing Mar					ssing Marks: 17			

	Part B: Content of the Course							
	Total Periods: 30							
Tentative Practical List	Note: This is tentative list; the teachers concern can add more program as per requirement.							
	1. Python program to find the union of two lists.							
	 Python program to find the intersection of two lists. Using for loop, print a table of Celsius/Fahrenheit equivalences. Let c be the Celsius temperatures ranging from 0 to 100, for each value of c, print the corresponding Fahrenheit temperature. 							
	4. Using while loop, produce a table of sins, cosines and tangents. Make a variable x in range from 0 to 10 in steps of 0.2. For each value of x, print the value of sin(x), cos(x) and tan(x).							
	5. Write a program that reads an integer value and prints —leap year or —not a leap year.							
	6. Write a program that takes a positive integer n and then produces n lines of output shown as follows.							
W 3 - M	For example, enter a size: 5 *							
	**							
	**** ****							
	7. Write a function that takes an integer _n'as input and calculates the							



1 + 1/1! + 1/2! + 1/3! + ... + 1/n

- 8. Write a function that takes an integer input and calculates the factorial of that number.
- 9. Write a function that takes a string input and checks if it's a palindrome or not.
- 10. Write a list function to convert a string into a list, as in list (_abc') gives [a, b, c].
- 11. Write a program to generate Fibonacci series.
- 12. Write a program to check whether the input number is even or odd.
- 13. Write a program to compare three numbers and print the largest one.
- 14. Write a program to print factors of a given number.
- 15. Write a method to calculate GCD of two numbers.
- 16. Write a program to create Stack Class and implement all its methods. (Use Lists).
- 17. Write a program to create Queue Class and implement all its methods. (Use Lists)
- 18. Write a program to implement linear and binary search on lists.
- 19. Write a program to sort a list using insertion sort and bubble sort.
- 20. Python program to remove the "i" th occurrence of the given word in a list where words repeat.
- 21. Python program to count the occurrences of each word in a given string sentence.
- 22. Python program to check if a substring is present in a given string.
- 23. Python program to map two lists into a dictionary.
- 24. Python program to count the frequency of words appearing in a string using a dictionary.
- 25. Python program to create a dictionary with key as first character and value as words starting with that character.
- 26. Python program to find the length of a list using recursion.
- 27. Python program to read a file and capitalize the first letter of every word in the file.
- 28. Python program to read the contents of a file in reverse order.
- 29. Python program to create a class in which one method accepts a string from the user and another prints it.
- 30. Study and Implementation of Database, Structured Query Language and database connectivity.

Part C - Learning Resources

Text Books, Reference Books, Other Resources

Suggested Readings:

1. T. Budd, Exploring Python, TMH, 1st Ed, 2011

- 2. Allen Downey, Jeffrey Elkner, Chris Meyers, How to think like a computer scientist: Learning with Pyth,Freelyavailableonline.2012
- 3. Luca Massaron John Paul Mueller, Python for Data Science For Dummies, Wiley, 2ed, 2019
- 4. Allen B. Downey, Think Python: How to Think Like a Computer Scientist, 2nd edition by O'Reilly, 2015
- 5. Zed A. Shaw, Learn Python 3 the Hard Way (Addison-Wesley, 2016)

E-Resources:

Topics related Python from W3Shool

1. Introduction

https://www.w3schools.com/python/default.asp

2. File Handling

https://www.w3schools.com/python/python_file_handling.asp

3. NumPy

https://www.w3schools.com/python/numpy/default.asp

4. Pandas

https://www.w3schools.com/python/pandas/default.asp

5. SciPy

https://www.w3schools.com/python/scipy/index.php

6. Diango

https://www.w3schools.com/django/index.php

7. Matplotlib

https://www.w3schools.com/python/matplotlib_intro.asp

8. Machine Learning

https://www.w3schools.com/python/python_ml_getting_started.asp

9. Python MySQL

https://www.w3schools.com/python/python_mysql_getstarted.asp

Topics related Python from SWAYAM/NPTEL

- 10. https://www.youtube.com/channel/UCxu1cR5XRauYn37yg-Fh6rA
- 11. https://www.youtube.com/channel/UCJAgwlniUkaShdmA5aAZdQw

Topics related Python from Tutorials

- 12. https://www.javatpoint.com/python-tutorial
- 13. http://docs.python.org/3/tutorial/index.html
- 14. http://interactivepython.org/courselib/static/pythonds
- 15. http://www.ibiblio.org/g2swap/byteofpython/read/

Part D: Assessment and Evaluation

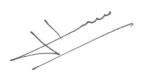
Suggested Continuous Evaluation Methods:

Maximum Marks: 50

Continuous Comprehensive Evaluation (CCE): Not Applicable

University Exam(UE): 50 Marks

Internal Assessment:		
Continuous Comprehensive	Class Test/Assignment/Presentation	Not Applicable
Evaluation (CCE)		



Declaration

	yllabus of this subject is frame as per the TOK of department	OI III	igner educat	1011,
	tisgarh.		C1	
1.	Dr. H.S. Hota	-	Chairman	
	Prof. and Head, Dept. of Computer Science and Application		3.6.1	& wor
2.	Dr. Sanjay Kumar	- 01	Member	100
	Prof. and Head, SoS in Computer Science, Pt. Ravishanka	r Shu	ikla Univers	Sity, ø 3
	Raipur			1 200
3.	Mr. Jitendra Kumar	-	Member	Ohn
	Asst. Prof., Dept. of Computer Science and Application			31610
	Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur			. 10 00
4.	Mr. H.S.P. Tonde	-	Member	Jilliane
	Asst. Prof. and Head, Dept. of Computer Science,			- Cerc
	Sant Gahira Guru University Sarguja, Ambikapur			. \
5.	Dr. Mamta Singh	-	Member	1
	Asst. Prof. and Head, Sai College, Bhilai		1	0161
	Hemchand Yadav Vishwavidyalaya, Durg			8 like 2
6.	Mr. Sushil Kumar Sahu	-	Member	XXX 12021
	Asst. Prof. and Head, Christ College, Jagdalpur			3(0)
	Shaheed Mahendra Karma Vishwavidyalaya, Bastar			1 per
7.	Mr. Vikrant Gupta	-	Member	1 min
	Prof. and Head, Batmul Ashram College, Salheana			
	Shaheed Nand Kumar Patel University, Raigarh			~ 1
8.	Mr. L.K. Gavel	-	Member	(\$1000 A12
	Asst. Prof. and Head, Govt. Ghanshyam Singh Gupt,	PG	College, B	alod 363
	Hemchand Yadav Vishwavidyalaya, Durg			\bigcup '
9.	Dr. Anil Kumar Sharma	-	Member	13
	Asst. Prof. and Head, A.P.S.G.M.N.S, Govt. PG	Colle	ege, Kawai	rdha Mw
	Hemchand Yadav Vishwavidyalaya, Durg			03/06/22
10	. Mr. Vishwnath Tamrakar	-	Member	asmund)
	Asst. Prof. and Head, Sant Guru Ghasidas Govt. PG College,	Kuru	d,	03/06/22
	Pt. Ravishankar Shukla University, Raipur			1
11	. Ms. Anjeeta Kujur -		Member	Agella
	Asst. Prof. and Head, Govt. R.B.R.N.E.S. PG College, Jashpu	ır		Alpeda 03 (06/25
	Sant Gahira Guru University Sarguja, Ambikapur			0
12	2. Mr. Suresh Kumar Thakur -		Member	Durch
	Asst. Prof. and Head, Indira Gandhi Govt. PG Colle	ege,	Vaishali N	agar 02/66/2
	Hemchand Yadav Vishwavidyalaya, Durg			
13	3. Dr. Ugrasen Suman		Member	
	Prof. and Head, Dept. of Computer Science	(Present Onl	ine)
	Devi Ahila Vishwavidyalaya, Indore			

Dete: 03.06.4022

	Part A: Introduction						
Pro	Program: Degree Course		Class: B.Sc IT III Yea	ľ	Year: 2022	Session:2022-2023	
1.	Course Code			BSC	CIT-5T		
2.	Course Title		Data Structure				
3.	Course Type	-		Tl	heory		
4.	Pre-requisite (if any)		No				
5.	Course Learning. Outcomes (CLO)	At th	problem. Use stack, Queue, Lists,	ta stru sortin Trees	actures, operations of the control o	ons and algorithms. chnique for any given	
6.	Credit Value			The	eory: 4		
7.	Total Marks		Max Marks: 50		Min Pass	ing Marks: 17	

	Part B: Content of the Course				
Total Periods: 60					
Unit	Topics	No. of Periods			
	Introduction and Basic Concepts of Data Structure: Data types: primitive, non-primitive data types, ADT, Linear and nonlinear data structure.				
I	Linear Data Structures: Arrays: One dimensional, Multidimensional array, allocation methods, address calculations, sparse arrays. Linked List: Singly and Doubly Linear link lists, singly and doubly circular linked list: Definitions, operations (INSERT, DELETE, TRAVERSE) on these lists. (Insertion operation includes — insertion before a given element, insertion after a given element, insertion at given position, insertion in sorted linked list)	12			
П	Stack: Definition, Operations PUSH, POP, TRAVERSE, implementations using array and linked list, Applications of stack: Infix, Prefix, Postfix representation and conversion using stack, Postfix expression evaluation using stack. Queue: Introduction, and Types of Queues: Priority Queue, Circular queue, Double Ended Queue, operations (INSERT, DELETE, TRAVERSE), implementation using array and linked list and applications	12			
Щ	Non-linear Data Structure: Trees: Definition of trees and their types, Binary trees, Properties of Binary trees and Implementation operation (Insertion, deletion, searching and traversal algorithm: preorder, post order, in-order traversal), Binary Search Trees, Implementations, Threaded trees, AVL Trees.	12			
IV.	Graph: Definition of Graph and their types, adjacency and incident (matrix & linked list) representation of graphs, Graph Traversal – Breadth first Traversal, Depth first Traversal, Connectivity of graphs; Weighted Graphs, Shortest path Algorithm, spanning tree, Minimum Spanning tree, Kruskal's and prim's algorithms. Static Hashing: Introduction, Hash table, Hash function.	12			



V.	Sorting Methods: Types of sorting, Sequential Sort, Insertion Sort, Bubble Sort, Quick Sort, Merge Sort. Searching: Linear search, Binary search, Hashing, collision resolution methods, Comparison of Search trees.				
Keywords: Linear Data Structure, Non-linear Data Structure, Searching, Sorting, Graph.					

Part C -Learning Resources

Text Books, Reference Books, Other Resources

Suggested Readings:

- 1. "Data Structures and Algorithms in C++", Michael T. Goodrich, Wiley, 2007
- 2. "Fundamentals of Data Structures", Horowitz and Sahani, Computer Science Press, 1978
- 3. "Data structures and Algorithms", Aefred V. Aho, Jhon E. Joperoft and J.E. Ullman.
- 4. "An Introduction to Data Structures with Applications", Jean Paul Trembley and Paul Sorenson, TMH, International Student Edition, 1985
- 5. "Data Structures and Program Design in C", R. Kurse, Leung &Tondo, 2nd Edition, PHI publication

E- Resources:

1. Introduction to Data Structure

 $\frac{\text{https://www.youtube.com/watch?v=zWg7U00EAoE\&list=PLBF3763AF2E1C572F\&inder}{\text{ex=1}}$

https://www.w3schools.in/data-structures/tutorials/

2. Stacks

 $https://www.youtube.com/watch?v=g1USSZVWDsY\&list=PLBF3763AF2E1C572F\&ind\ ex=2$

3. Queues and linked list

https://www.youtube.com/watch?v=PGWZUgzDMYI&list=PLBF3763AF2E1C572F&in dex=3

Trees

 $\label{eq:https://www.youtube.com/watch?v=tORLeHHtazM\&list=PLBF3763AF2E1C572F\&index=6} In the control of the$

5. Graphs

https://www.youtube.com/watch?v=9zpSs845wf8&list=PLBF3763AF2E1C572F&index=24

Part D: Assessment and Evaluation

Maximum Marks: 50

Declaration

The syllabus of this subject is frame as per the TOR of department of higher education, Chhattisgarh.

1. Dr. H.S. Hota

Prof. and Head, Dept. of Computer Science and Application

2. Dr. Sanjay Kumar - Member Prof. and Head, SoS in Computer Science, Pt. Ravishankar Shukla University, Raipur

3. Mr. Jitendra Kumar

Asst. Prof., Dept. of Computer Science and Application Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur Member

Chairman

3/6/22

4. Mr. H.S.P. Tonde Member Asst. Prof. and Head, Dept. of Computer Science, Sant Gahira Guru University Sarguja, Ambikapur 5. Dr. Mamta Singh Asst. Prof. and Head, Sai College, Bhilai Hemchand Yadav Vishwavidyalaya, Durg 6. Mr. Sushil Kumar Sahu Member Asst. Prof. and Head, Christ College, Jagdalpur Shaheed Mahendra Karma Vishwavidyalaya, Bastar 7. Mr. Vikrant Gupta Member Prof. and Head, Batmul Ashram College, Salheana Shaheed Nand Kumar Patel University, Raigarh 8. Mr. L.K. Gavel Member Asst. Prof. and Head, Govt. Ghanshyam Singh Gupt, PG College, Balod Hemchand Yadav Vishwavidyalaya, Durg 9. Dr. Anil Kumar Sharma Asst. Prof. and Head, A.P.S.G.M.N.S, Govt. PG College, Kawardha Hemchand Yadav Vishwavidyalaya, Durg 10. Mr. Vishwnath Tamrakar Member Asst. Prof. and Head, Sant Guru Ghasidas Govt. PG College, Kurud, Pt. Ravishankar Shukla University, Raipur 11. Ms. Anjeeta Kujur Member Asst. Prof. and Head, Govt. R.B.R.N.E.S. PG College, Jashpur Sant Gahira Guru University Sarguja, Ambikapur 12. Mr. Suresh Kumar Thakur Member Asst. Prof. and Head, Indira Gandhi Govt. PG College, Vaishali Nagar Hemchand Yadav Vishwavidyalaya, Durg 13. Dr. Ugrasen Suman Member

(Present Online)

Date: 03.06.2022

Prof. and Head, Dept. of Computer Science

Devi Ahila Vishwavidyalaya, Indore

	Part A: Introduction					
Pro	gram: Degree Course	***************************************	Class: B.ScIT II	I Year	Year: 2022	Session:2022-2023
1.	Course Code		<u></u>	I	SSCIT-6T	
2.	Course Title			Python	Programming	
3.	Course Type				Theory	,
4.	Pre-requisite (if any)		Basic knowledge		nming and conc cogramming	ept of object-oriented
5.	Course Learning. Outcomes (CLO)	At the	functions. Identify and dictionaries. Discover the command file system. Determine the new JSON and other file.	re and conficiency y the met monly use eed for so	in handling of a Py in handling of hods to create a ed operations inveraping websites s.	
6.	Credit Value				Theory: 4	
7.	Total Marks	Max	Marks: 50		Min Passi	ng Marks :17

Part B: Content of the Course							
	Total Periods: 60						
Unit	Topics	No. of Periods					
I	Introduction to Python: Installing Python, basic syntax, interactive shell, editing, saving, and running a script, the concept of data types; variables, assignments; immutable variables; numerical types, Operators (Arithmetic Operator, Relational Operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bit wise Operator, Increment or Decrement operator) and Expressions, comments in the program, understanding error messages.	12					
П	Creating Python Programs: Input and Output Statements, Control statements (Branching, Looping, Conditional Statement, exit function, Difference between break, continue and pass.) Function: Defining a function, calling a function, Types of functions, Function Arguments, Anonymous functions, Global and local variables	12					
Ш	Strings and text files: manipulating files and directories, os and sys modules; text files: reading/writing text and numbers from/to a file; creating and reading a formatted file (csv or tab-separated). String manipulations: subscript operator, indexing, slicing a string; strings and number system: converting strings to numbers and vice- versa. Binary, Octal, Hexadecimal numbers.	12					



IV.	Lists, Tuples, and Dictionaries; Basic list Operators, replacing, inserting, removing an element, searching and sorting lists, Accessing tuples, Operations, Working, Functions and Methods, dictionary literals, adding and removing keys, accessing and replacing values, Traversing Dictionaries.	12			
V.	Exception Handling: Exception, Exception Handling, except clause, try, finally, clause, User defined exceptions.	12			
Python Libraries: Exploring python libraries like Panda, Numpy, TensorFlow, Scikit-Learn, Keras, PyTorch, SciPy etc.					
Keywords:List, Tuple, Dictionary, Panda, Numpy, TensorFlow, Scikit-Learn, Keras, PyTorch, SciPy.					

Part C -Learning Resources

Text Books, Reference Books, Other Resources

Suggested Readings:

- 1. T. Budd, Exploring Python, TMH, 1st Ed, 2011
- 2. Allen Downey, Jeffrey Elkner, Chris Meyers, How to think like a computer scientist: Learning with Pyth,Freelyavailableonline.2012
- 3. Luca Massaron John Paul Mueller, Python for Data Science For Dummies, Wiley, 2ed, 2019
- 4. Think Python: How to Think Like a Computer Scientist, 2nd edition by Allen B. Downey, O'Reilly, 2015
- 5. Learn Python 3 the Hard Way by Zed A. Shaw (Addison-Wesley, 2016)

E-Resources:

1. Introduction

https://www.w3schools.com/python/default.asp

2. File Handling

https://www.w3schools.com/python/python file handling.asp

3. NumPy

https://www.w3schools.com/python/numpy/default.asp

4 Pandas

https://www.w3schools.com/python/pandas/default.asp

5. SciPy

https://www.w3schools.com/python/scipy/index.php

6. Django

https://www.w3schools.com/django/index.php

7. Matplotlib

https://www.w3schools.com/python/matplotlib intro.asp

8. Machine Learning

https://www.w3schools.com/python/python_ml_getting_started.asp

9. Python MySQL

https://www.w3schools.com/python_python_mysql_getstarted.asp

10. Topics related Python from SWAYAM/NPTEL

https://www.youtube.com/channel/UCxu1cR5XRauYn37yg-Fh6rA



https://www.youtube.com/channel/UCJAgw1niUkaShdmA5aAZdQw

11. Introduction to Python Programming from Coursera: https://www.coursera.org/learn/python-programming-intro

12. Crash Course on Python: https://www.coursera.org/learn/python-crash-course

13. Python for everybody:

https://www.coursera.org/specializations/python

14. Introduction to Scripting in Python Specialization https://www.coursera.org/specializations/introduction-scripting-in-python

15. Topics related to Python from Tutorials

https://www.javatpoint.com/python-tutorial

http://docs.python.org/3/tutorial/index.html

http://interactivepython.org/courselib/static/pythonds

http://www.ibiblio.org/g2swap/byteofpython/read/

Part D: Assessment and Evaluation

Maximum Marks: 50

Declaration			
The syllabus of this subject is frame as per the TOR of department.	nent of h	igher educat	ion,
Chhattisgarh.			
1. Dr. H.S. Hota	-	Chairman	
Prof. and Head, Dept. of Computer Science and Applicati	on		1 ser
2. Dr. Sanjay Kumar	-	Member	22
Prof. and Head, SoS in Computer Science, Pt. Ravisha	ankar Sh	ukla Univers	sity,
Raipur			03-20
3. Mr. Jitendra Kumar	-	Member	Lim
Asst. Prof., Dept. of Computer Science and Application			216122
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur			3.4
4. Mr. H.S.P. Tonde	-	Member	yme.
Asst. Prof. and Head, Dept. of Computer Science,			Corole
Sant Gahira Guru University Sarguja, Ambikapur			٨
5. Dr. Mamta Singh	-	Member	\ \
Asst. Prof. and Head, Sai College, Bhilai		\sim	Out 1
Hemchand Yadav Vishwavidyalaya, Durg			3167 1
6. Mr. Sushil Kumar Sahu	-	Member	SWW 120
Asst. Prof. and Head, Christ College, Jagdalpur			3(6)
Shaheed Mahendra Karma Vishwavidyalaya, Bastar			1 000
7. Mr. Vikrant Gupta	-	Member	(Nus
Prof. and Head, Batmul Ashram College, Salheana			
Shaheed Nand Kumar Patel University, Raigarh			mel
8. Mr. L.K. Gavel	, -	Member	May 1 122
Asst. Prof. and Head, Govt. Ghanshyam Singh Gu	pt, PG	College, Ba	ilod 7 63 06 2
Hemchand Yadav Vishwavidyalaya, Durg			$\bigwedge \bigcup \bigcup \bigcup \bigcup \bigcup$
9. Dr. Anil Kumar Sharma	-	Member	my
Asst. Prof. and Head, A.P.S.G.M.N.S, Govt. P	G Colle	ege, Kawar	dha 03/04
Hemchand Yadav Vishwavidyalaya, Durg			(munit)
10. Mr. Vishwnath Tamrakar	-	Member	03/06/20
Asst. Prof. and Head, Sant Guru Ghasidas Govt. PG Colle	ege, Kuru	ıd,	0 71
Pt. Ravishankar Shukla University, Raipur			1 1
11. Ms. Anjeeta Kujur	-	Member	Arrola
Asst. Prof. and Head, Govt. R.B.R.N.E.S. PG College, Jas	shpur		03/06/22
Sant Gahira Guru University Sarguja, Ambikapur			03(0(00)
12. Mr. Suresh Kumar Thakur	-	Member	Birrest.
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			0-1-10-

Asst. Prof. and Head, Indira Gandhi Govt. PG College, Vaishali Nagar Hemchand Yadav Vishwavidyalaya, Durg

13. Dr. Ugrasen Suman
Prof. and Head, Dept. of Computer Science
Devi Ahila Vishwavidyalaya, Indore

Member (Present Online)

Date: 03.06.2022