**DETAIL ACTIVITY PLAN FOR PRACTICAL COURSES**

| **Name of the Instructor/Faculty: Mr. RAHUL BIR** | | | |
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| **Designation of Faculty: Assistant Professor** | | | |
| **Department of Faculty: Computational Sciences** | | | |
| **Course Name & Code: Python Lab & BCA29106** | | | |
| **Course Credit: 2** | **Weekly L-T-P: 0-0-4** | **Total Contact Hours in the semester: 60P** | **Maximum Marks: 100** |
| **Programme(s) Name & Semester/Term: BCA/2nd  Sem / 2023-2024** | | | |
| **Target students [Section(s)/Group(s)] & Total Students: BCA Sec-C** | | | |

**Course Outcomes, Module(s)/Experiment Number and Learning Level Mapping.**

| **Sl.No.** | **Course Outcomes** | **Module(s)** | **Learning level(s) as per Bloom’s Taxonomy** |
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| 1 | Define knowledge about the basic concept of writing a program and summarize the role of constants, variables, identifiers, operators, type conversion and loops, decision making Python Language | M1 | K1,K2 |
| 2 | Understand and illustrate the list and matrix representation in python | M2 | K2,K3 |
| 3 | Analyze the role of Functions involving the idea of modularity and construct user defined functions. | M3 | K3,K4 |
| 4 | Illustrate error handling techniques using exception handling and develop python programs using file input/output operations | M4 | K2,K3 |
| 5 | Evaluate and criticize the different package with different types of programmes in python. | M5 | K4,K5 |

**Components of Assessments:**

1. Continuous Internal Assessments (CIE) as per the syllabus and assessment policy
2. End Semester Examination as per the syllabus and assessment policy

| **Experiment No** | **Name of the Experiment** | **Date(s)**  **(From-To)** | **Objective(s)** | **Duration (in hours)** | **Book(s) for Theory (If applicable)** | **Reference (Lab Manual)** |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | 1. Write a Python program to accept two numbers from the user and calculate addition. 2. Write a Python program to accept two numbers from the user and calculate subtract. 3. Write a Python program to accept two numbers from the user and calculate multiply. 4. Write a Python program to accept two numbers from the user and calculate the divide. 5. Write a Python program to accept sides from the user and find the area of a [Square](http://www.c4learn.com/c-programs/c-program-to-calculate-area-of-square.html), [Rectangle.](http://www.c4learn.com/c-programs/c-program-to-calculate-area-of_13.html) 6. Write a Python program to accept the radius from the user and calculate the area and circumferences of the circle. 7. Write a Python program to accept two numbers from the user and swap between two numbers using a third variable. 8. Write a Python program to accept two numbers from the user and swap between two numbers without using a third variable. 9. Write a Python program that accepts days from the user and calculates the days, months, and years from the total number of days. 10. Write a Python program where x=(a+b)2/(a-b)2 | Monday 12/2/2024  TO  Monday 26/2/2024 | Basics Programming Constructs | 8 | Python Cookbook: Recipes for Mastering Python. |  |
| 2 | 1. Write a python program that will take input temperature as Celsius and print Fahrenheit and Kelvin. 2. Write a python program that will take Basic Salary of an employee and print Cash in hand. 3. Hint: DA= 20% of Basic, TA= 5% of Basic, HRA= 10% of Basic. Salary= Basic + DA + HRA + TA 4. Write a python program that will take Unit price and Quantity of an article and print the cost. 5. Write a python program to generate the following output. 5 10 9. 6. WAP program to print the volume of a cylinder when radius and height of the cylinder is given by user. area=πr2h. WAP that asks your height in centimeters and converts it into foot and inches. 7. Write a program to reverse the digits of any two digits number. Accept the number from the user. 8. Write a python program to calculate the compound interest and the amount for any sum of money for a certain period of time, Take the sum, time period, rate of interest from the user. 9. Write a python program to calculate the mean of some range of values taken from the user. | Monday 4/3/2024  TO  Thursday 7/3/2024 | Basics Programming Constructs | 4 | Python Cookbook: Recipes for Mastering Python. |  |
| 3 | 1. Simple Programs on the if-else statement: 2. Write a PYTHON program to check if a number is even or odd. 3. Write a PYTHON program to find the greater among two numbers. 4. Write a PYTHON program to check whether a person is an adult or not. 5. Write a PYTHON program to check whether a given number is positive or not. 6. Write a PYTHON program to check whether a number is divisible by 2 and 3. 7. Write a PYTHON program to check whether a number is divisible by 3 or 5. 8. Write a PYTHON program to check the greatest among 3 numbers. 9. Write a PYTHON program to check the greatest among 3 numbers using the ternary operator. 10. Write a PYTHON program to check if a year is a leap year or not. 11. Write a PYTHON program to calculate the electric bill amount, according to the given chart 12. =1 - 100 unit - 5/- 13. = 101-200 unit - 7/- 14. =201-300 unit - 10/- 15. = above 300 – 15/- 16. Write a PYTHON program to calculate the student grade using if-else. 17. If percentage > 85 print A grade, If percentage < 85 && percentage >= 75 print B grade, If percentage < 75 && percentage >= 50 print C grade, If percentage > 30 && percentage <= 50 print D grade, If percentage <30 print fail. | Friday 8/3/2024  TO  Monday 11/3/2024 | Basics Programming Constructs | 8 | Python Cookbook: Recipes for Mastering Python. |  |
| 4 | 1. Write a PYTHON program to convert the temperature from Celsius to Fahrenheit and vice versa. 2. Write a PYTHON program to check whether the last digit of a number is divisible by 3 or not. 3. Write a PYTHON program to check whether a number is buzz or not. 4. Write a PYTHON program to check whether a number is automorphic or not. 5. Write a PYTHON program to input any alphabet and check whether it is vowel or consonant. 6. Write a PYTHON program to input any character and check whether it is alphabet, digit or special character. 7. Write a PYTHON program to check whether a character is uppercase or lowercase alphabet. 8. Write a PYTHON program to input week number and print week day. 9. Write a PYTHON program to calculate profit or loss. 10. Write a PYTHON program to input marks of five subjects Physics, Chemistry, Biology, Mathematics and Computer. Calculate percentage and grade according to following: Percentage >= 90% : Grade A ,   Percentage >= 80% : Grade B, Percentage >= 70% : Grade C,  Percentage >= 60% : Grade D, Percentage >= 40% : Grade E,  Percentage < 40%: Grade F   1. Write a PYTHON program to input basic salary of an employee and calculate its Gross salary according to following: 2. Basic Salary <= 10000 : HRA = 20%, DA = 80% Basic Salary <= 20000 : HRA = 25%, DA = 90% Basic Salary > 20000 : HRA = 30%, DA = 95% 3. A school display a notice on the school notice board regarding admission in Class XI for choosing streams according to the marks obtained in English, Maths and Science in Class X Council Examination. | Thursday 14/3/2024  TO  Friday 15/3/2024 | Basics Programming Constructs | 4 | Python Cookbook: Recipes for Mastering Python. |  |
| 5 | 1. Write a PYTHON program to print n natural numbers using a while loop. 2. Write a PYTHON program to print all odd numbers in a given range. 3. Write a PYTHON program to add first n numbers using a while loop. 4. Write a PYTHON program to print all numbers in a given range divisible by 3 or 5 using a while loop. 5. Write a Python program using a loop to count the number of even and odd numbers from a series of numbers. 6. Write a PYTHON program to add all even numbers in a given range. 7. Write a PYTHON program to calculate the factorial of a given number using for loop. 8. Write a PYTHON program to find if a number is prime or not. 9. Write a PYTHON program to find the reverse of a given number. 10. Write a PYTHON program to add all the digits of a given number. 11. Write a PYTHON program to print all the Fibonacci series up to a given range. 12. Write a PYTHON program to find a number is Armstrong or not. 13. Write a PYTHON program to find whether a number is a palindrome or not. 14. Write a Python program to check whether a number is perfect or not. 15. Write a Python program to find out prime numbers between 1 to 100. 16. Write a python program to print the Fibonacci number. | Monday 18/3/2024  TO  Thursday 21/3/2024 | Basics Programming Constructs | 4 | Python Cookbook: Recipes for Mastering Python. |  |
| 6 | 1. Write a program that accepts a list from the user and prints the alternate element of the list. 2. Write a program that accepts a list of users. Your program should reverse the content of the list and display it. Do not use reverse() method. 3. Find and display the largest number of a list without using the built-in function max(). Your program should ask the user to input values in a list from a keyboard. 4. Write a program that reads a string from the user containing a date in the form mm/dd/yyyy. It should print the date in the form of March 12, 2021. 5. Write a program that inputs a string and asks the user to delete a given word from a string. 6. Find the sum of each row of the matrix of size m x n. For example, the following matrix output will be like this:   https://www.pyforschool.com/assignment/images/matrix.jpg   1. Sum of row 1 = 32 2. Sum of row 2 = 31 3. Sum of row 3 = 63 | Friday 22/3/2024  TO  Monday 25/3/2024 | Lists | 8 | Python Cookbook: Recipes for Mastering Python. |  |
| 7 | 1. Write a Python program to create a tuple. 2. Write a Python program to create a tuple with different data types. 3. Write a Python program to unpack a tuple in several variables. 4. Write a Python program to add an item to a tuple. 5. Write a Python program to convert a tuple to a string. 6. Write a Python program to find the repeated items of a tuple. 7. Write a Python program to convert a tuple to a dictionary. 8. Write a Python program to compute the sum of all the elements of each tuple stored inside a list of tuples. | Thursday 28/3/2024  TO  Friday 29/3/2024 | Lists | 6 | Python Cookbook: Recipes for Mastering Python. |  |
|  | **Class Test 1: 1st April to 6th April 2024** | | | | | |
| 8 | 1. Write a PYTHON program to check whether a number is prime or not using function. 2. Write a PYTHON program to check if a number is a palindrome or not using function. 3. Write a PYTHON program to calculate the factorial of a given number using function. 4. Write a PYTHON program to calculate the Fibonacci series using function. 5. Write a PYTHON program to swap two numbers by call by value and call by address. 6. Write a program to find LCM and GCD of two numbers using user define function. | Monday 8/4/2024  TO  Friday 10/5/2024 | Function & Modules | 8 | Python Cookbook: Recipes for Mastering Python. |  |
| 9 | 1. Write a Python program to create a dictionary and update existing key values. 2. Write a Python program, to sum up, all the items in a dictionary. 3. Write a Python program to multiply all the items in a dictionary. 4. Write a Python program to sort (ascending and descending) a dictionary by value. 5. Write a Python program to concatenate the following dictionaries to create a new one. 6. Write a Python program to check whether a given key already exists in a dictionary. 7. Write a Python program to change the value of a specific item by referring to its key name. 8. Write a Python program to sort a given dictionary by key 9. Write a Python program to match key values in two dictionaries. 10. Write a Python program to check if a specific Key and a value exist in a dictionary. 11. Write a Python program to check all values are the same in a dictionary. 12. Python Program to Count the Frequency of Words Appearing in a String Using a Dictionary 13. Write a Python program to create a dictionary and check whether a given key already exists in a dictionary. | Monday 13/5/2024  TO  Friday 17/5/2024 | Function & Modules | 8 | Python Cookbook: Recipes for Mastering Python. |  |
| 10 | 1. Write a program to create a text file named ‘std\_rec’ with record stu\_name, stu\_roll and stu\_marks. 2. Write a python program in python to create a binary file and print the content of the file. 3. Write a program to demonstrate Object and Class in Python. 4. Write a program to demonstrate Inheritance in python. 5. Create a GUI program for calculator using python tkinter. 6. Create a GUI program for Calendar using python tkinter. | Monday 20/5/2024  TO  Thursday 23/5/2024 | File Handling, OOPS & Event Driven Programming | 4 | Python Cookbook: Recipes for Mastering Python. |  |
| 11 | 1. Write a program to element-wise addition of two numpy arrays. 2. Write a program for multiplying two matrix(2D numpy array). 3. Create a program to create a line graph for two different array using matplotlib. 4. Write a program in matplotlib for creating a Pie chart. 5. Program to demonstrate Scipy and its functions. | Thursday 30/5/2024  TO  Friday 31/5/2024 | Packages | 6 | Python Cookbook: Recipes for Mastering Python. |  |
| **Class Test 2: 3rd June to 8th June 2024** | | | | | | |

**Total Experiment/ Lab Hours: 11 Experiments/ 60 hours**

**Details of the extended activities to be conducted (if applicable)**

| Activity No | Name of the Activities | Date(s) | Objective(s) | Duration (in hours) | Types of Activities (Mini Project/Field Work/Hands-on) | Reference (Lab Manual) |
| --- | --- | --- | --- | --- | --- | --- |
| 1 |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |

**Suggested Readings**

1. Python Cookbook: Recipes for Mastering Python.

**Laboratory Manual**

**Other Learning Resources (Name and/or URL of Journals/MOOCs/Online Resources, if Applicable)**

1. https://www.youtube.com/watch?v=7wnove7K-ZQ&list=PLu0W\_9lII9agwh1XjRt242xIpHhPT2llg

Signature of the Faculty