# MANAV RACHNA INTERNATIONAL INSTITUTE OF RESEARCH AND STUDIES

(Deemed to be University under section 3 of the UGC Act 1956)

**NAAC ‘A++’ Grade University**

**BCS-DS-588: DATA SCIENCE WITH PYTHON LAB**

Unit 1

1. Write a simple Python program using procedural programming to calculate the factorial of a number.
2. Convert the procedural factorial program into an object-oriented program in Python.
3. Write a Python program that demonstrates the use of different types of literals (string, integer, float, and boolean).
4. Create a Python script that calculates the result of the expression 5 + 2 \* 3 \*\* 2 using operator precedence and associativity.
5. Write a Python function that takes two variables and swaps their values without using a third variable.
6. Write a Python program that checks if a given number is prime or not using control structures and relational operators.
7. Create a Python script that demonstrates the use of membership operators (in and not in) with lists.
8. Write a Python program that uses an if-elif-else structure to determine the grade of a student based on their score.
9. Create a Python script that uses multi-way selection to print the name of the day based on the day number (1 for Monday, 2 for Tuesday, etc.).
10. Implement a simple employee management system. Write functions for adding an employee, removing an employee, and displaying employee details. Create an Employee class with methods for adding, removing, and displaying employee details.
11. Build a calculator that can perform basic arithmetic operations (+, -, \*, /) using operator precedence.
12. Create a program that calculates the grade of a student based on their scores.
13. Develop a number guessing game where the user has to guess a number between 1 and 100.