

MCA-27 Python Programming Lab.

General Course Information

Course Code: MCA-27 Course Credits: 2 Type: Professional Core Lab. Course Contact Hours: 2 hours/week Mode: Lab practice and assignments	Course Assessment Methods (internal: 30; external:70) The internal and external assessment is based on the level of participation in lab. sessions and the timely submission of lab experiments/assignments, the quality of solutions designed for the assignments, the performance in VIVA-VOCE, the quality of lab. file and ethical practices followed. The internal examination is conducted by the course coordinator. The external examination is conducted by external examiner (appointed by the Controller of Examination) in association with the internal examiner appointed by the Chairperson of the Department.
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Pre-requisites: Basic programming skills

About the Course:

Python is a scripting programming language known for both its simplicity and wide breadth of applications. For this reason it is considered one of the best languages for beginners. Used for everything from web development to scientific computing Python is referred to as a general purpose language by the greater programming community. The major objective of Python language is to make the students solve real word problem efficiently using python library.

Course Outcomes: By the end of the course students will be able to:

- CO1. **Implement** solutions to the given assignments in Python.
- CO2. **Use** various Python packages for solving different programming problems.
- CO3. **Devise** solutions for complex problems of data analysis and machine learning.
- CO4. **Evaluate** the output of data analysis and machine learning models.
- CO5. **Create** lab records of the solutions for the given assignments.
- CO6. **Demonstrate** use of ethical practices, self-learning and team spirit.

List of experiments/assignments

1. Install Python and explore various popular IDE like IDLE, PyCharm, and Anaconda.
2. Assignments to perform various number operations like
 - a. Find maximum from a list of numbers
 - b. GCD of two number
 - c. Square root of a number
 - d. Check number is prime or not.
 - e. Print first N prime numbers
 - f. Remove duplicate numbers from list
 - g. Print the Fibonacci series.
3. Assignments to perform various operations on Strings like creation, deletion, concatenation.
4. Create a List L = [10, 20, 30]. Write programs to perform following operations:
 - a. Insert new numbers to list L.
 - b. Delete numbers from list L.
 - c. Sum all numbers in list L.
 - d. Sum all prime numbers in list L.
 - e. Delete the list L.
5. Create a Dictionary D= {'Name': 'Allen', 'Age': 27, '5:123456'}. Write programs to perform following operations:

- a. Insert new entry in D.
 - b. Delete an entry from D.
 - c. Check whether a key present in D.
 - d. Update the value of a key.
 - e. Clear dictionary D.
6. Two assignments on Sets to perform various operation like union, intersection, difference etc.
7. Two assignments related to searching operation like linear search, binary search.
8. Three assignments related to sorting like selection sort, bubble sort, insertion sort.
9. Demonstrate the use of dictionary for measuring student marks in five subjects and you have to find the student having maximum and minimum average marks.
10. Two assignment on usage of different available packages like random package to perform
 - a. Print N random numbers ranging from 100 to 500.
 - b. Print 10 random strings whose length between 3 and 5.
11. Two assignments on usage of package such as Numpy, Pandas.
12. Implement and demonstrate the functions of a simple calculator.
13. One assignment on implementing object oriented concept such as classes, inheritance, and polymorphism.
14. One assignment on file handling that how data is read and written to a file.

Note:

The actual experiments/assignments will be designed by the course coordinator. One assignment should be designed to be done in groups of two or three students. The assignments must meet the objective of the course and the levels of the given course outcomes. The list of assignments and schedule of submission will be prepared by the course coordinator at the beginning of the semester.