

**MIT COLLEGE OF MANAGEMENT**

**Department Of Bachelors of Computer**

**Applications :**

LAB MANUAL

Fundamental of data Analytics

PROGRAMMING LAB

**INDEX OF EXPEREMENTS**

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| --- | --- | --- | --- | --- | --- |
| **Week** | **Theory/ Practical (Group-I/ II)** | | **Topic Covered Date and Remarks** | | |
| **Practical Day** | **Topics/ Programs** | **Date** | **HOD** | **Director Principal** |
| 1st |  | Introduction to python programming |  |  |  |
| 2nd  To  7nd | 1  2 3 | Pandas   * Reading Data set through pandas. * Getting basic information. * Basic information of pandas library. |  |  |  |
| 8nd | 4  5  6 | EDA through PANDAS   * Finding missing values * Imputing values * Deleting / treatment of null values |  |  |  |
| 9th | 7. 8. | Data visualization With MatplotLIB  -Line Chart   * Bar Chart * Histogram * Box plot * Violin plot |  |  |  |
|  |  | * Scatter plot * Hue semantic * Bubble plot * Pie Chart   Advance Visualization with Seaborn |  |  |  |
| 12th | 9 | * Analyze Data Distributions: * Explore Relationships: * Manipulate Data: * Visualize Insights |  |  |  |
| 15th | 10 | **Hypothesis testing.**   * Aim: To understand null Hypothesis   and alternative hypotheses   * T-tests: * ANOVA: * Chi-square test:   Spearman correlation |  |  |  |
| 18th | 19 | Time Series Analysis |  |  |  |
| 20th | 20 | * Time series data and components * ARIMA models   Forecasting, |  |  |  |
| 22th | 21 | To develop understanding of Machine learning Algorithms:  Support Vector Machines (SVM):  Ensemble learning (Random Forest, Gradient Boosting):  Model evaluation, |  |  |  |
| 24th | 22  23 | Introduction to Tableau  ● Basic information of canvas and different panes  Project on analysis |  |  |  |

**Preface**

This manual will introduce you to the Python programming language. It’s

aimed at beginning programmers, but even if you’ve written programs

before and just want to add Python to your list of languages, It will get you

started. Python is a powerful high-level, object-oriented programming

language created by Guido van Rossum. It has simple easy-to-use syntax,

making it the perfect language for someone trying to learn computer

programming for the first time.This practical manual will be helpful for

students of all BCA streams for better understanding the course from the

point of view of applied aspects. Though all the efforts have been made to

make this manual error free, yet some errors might have crept in

inadvertently. Suggestions from the readers for the improvement of the

manual are most welcomed.

1. **Lab Objectives:**

To write, test, and debug simple Python programs.

To implement Python programs with conditionals and loops.

Use functions for structuring Python programs.

Represent compound data using Python lists, tuples, and dictionaries.

Read and write data from/to files in Python.

1. **Lab Outcomes:**

Upon completion of the course, students will be able to

Write, test, and debug simple Python programs.

Implement Python programs with conditionals and loops.

Develop Python programs stepwise by defining functions and calling them.

Use Python lists, tuples, dictionaries for representing compound data.

Read and write data from/to files in Python.

1. **Introduction about lab:**

Minimum System requirements:Processors: Intel Atom® processor or Intel® Core™ i3 processor.

Disk space: 1 GB.

Operating systems: Windows\* 7 or later, macOS, and Linux.

Python\* versions: 2.7.X, 3.6.X.,3.8.X, 3.9.X.

1. **General laboratory instructions :**

1. Students are advised to come to the laboratory at least 5 minutes before

(to the starting time), those who come after 5 minutes will not be allowed

into the lab.

2. Plan your task properly much before the commencement, come prepared

to the lab with the synopsis / program / experiment details.

3. Student should enter into the laboratory with:

a. Laboratory observation notes with all the details (Problem statement,

Aim, Algorithm, Procedure, Program, Expected Output, etc.,) filled in for the

lab session.

b. Laboratory Record updated up to the last session experiments and other

utensils (if any) needed in the lab. c. Proper Dress code and Identity card.

1. Sign in the laboratory login register, write the TIME-IN, and occupy the

computer system allotted to you by the faculty.

5. Execute your task in the laboratory, and record the results / output in the

lab observation notebook, and get certified by the concerned faculty.

6. All the students should be polite and cooperative with the laboratory staff,

and must maintain discipline and decency in the laboratory.

7. Computer labs are established with sophisticated and high end branded

systems, which should be utilized properly.

8. Students / Faculty must keep their mobile phones in SWITCHED OFF

mode during the lab sessions. Misuse of the equipment, misbehavior with

the staff and systems etc., will attract severe punishment.

9. Students must take the permission of the faculty in case of any urgency to

go out; if anybody found loitering outside the lab / class without permission

during working hours will be treated seriously and punished appropriately.

10. Students should LOG OFF/ SHUT DOWN the computer system before

he/she leaves the lab after completing the task (experiment) in all aspects.

He/she must ensure the system / seat is kept properly.

**DO’S AND DON'TS**

**Do’s**

1. Conform to the academic discipline of the department.  
     
   2. Enter your credentials in the laboratory attendance register.   
     
   3. Read and understand how to carry out an activity thoroughly before

coming to the laboratory.

4. Ensure the uniqueness with respect to the methodology adopted for

carrying out the experiments.

5. Shutdown the machine once you are done using it.

**Don'ts**

1. Eatables are not allowed in the laboratory.

2. Usage of mobile phones is strictly prohibited.

3. Do not open the system unit casing.

4. Do not remove anything from the computer laboratory without

permission.

5. Do not touch, connect or disconnect any plug or cable without your

faculty/laboratory technician’s permission.