

## DEPARTMENT OF COMPUTER SCIENCE 2025-26

### PYTHON PROGRAMMING LEVEL II

The objective of a Python programming LEVEL II course as an add on course offered to the BCA students of second year in the session 2025-26 typically aim to equip students with the advanced python programming and practical skills to write, debug, and apply Python code effectively. Following are the main objectives:

- Understand Structures
- Introduction to Advanced Python
- Learning GUI programming

**Duration of the course:** 30 hours

**Classes per week:** Two

**Pre-requisites:** Students must have the knowledge of fundamentals of python programming.

### SYLLABUS

#### MODULE 1:

Working on numbers, Strings, Lists, Tuples, Dictionary

#### MODULE 2:

Date & Time, Modules

#### MODULE 3:

Introduction to Advanced Python: Objects and Classes, Inheritance, Regular Expressions

#### MODULE 4:

Event Driven Programming & GUI Programming.

#### Reference Books:

- T. Budd, Exploring Python, TMH, 1st Ed, 2011
- Python Tutorial/Documentation [www.python.org](http://www.python.org) 2010
- Allen Downey, Jeffrey Elkner, Chris Meyers, how to think like a computer scientist: learning with Python, freely available online.2012
- <http://docs.python.org/3/tutorial/index.html>
- <http://interactivepython.org/courselib/static/pythonds>

### PRACTICALS

#### (Visual Python):

1. Write a menu-driven program to create mathematical 3D objects I.Curve
  - II. Sphere
  - III. Cone
  - IV. Arrow

V. Ring

VI. Cylinder

2. WAP to read n integers and display them as a histogram.
3. WAP to display sine, cosine, polynomial and exponential curves.
4. WAP to plot a graph of people with pulse rate p vs. height h. The values of p and h are to be entered by the user.
5. WAP to calculate the mass m in a chemical reaction. The mass m (in gms) disintegrates according to the formula  $m=60/(t+2)$ , where t is the time in hours. Sketch a graph for t vs. m, where  $t \geq 0$ .
6. A population of 1000 bacteria is introduced into a nutrient medium. The population p grows as follows:  
 $P(t) = (15000(1+t))/(15+ e)$   
where the time t is measured in hours. WAP to determine the size of the population at given time t and plot a graph for P vs t for the specified time interval.

### Course Outcome:

- Ability to automate tasks and solve real problems using advance programming in Python.
- Build projects using visual python.

### Evaluation criteria

- A minimum of 60% attendance is compulsory for the examination.
- Maximum marks for the final examination are 100. The distribution of marks is as follows:
  - Theory written paper: 50 marks
  - Practical: 25 marks
  - Class test: 20 marks
  - Attendance: 5 marks
    - 75%-80% = 1 mark
    - 80%-85% = 2 mark
    - 85%-90% = 3 mark
    - 90%-95% = 4 mark
    - 95%-100% = 5 mark
- Minimum qualifying marks for the course is 40 % marks.
- E-Certificates will be provided on the successful completion of the course.
- Grades will be given to the students as follows:

Marks Grading		
Marks Obtained	Grade	Division
70% and above	'A'	1 <sup>st</sup>
60% and less than 70%	'B'	2 <sup>nd</sup>
50% and less than 60%	'C'	3 <sup>rd</sup>
40% and less than 50%	'D'	Pass
Less than 40%	'E'	Fail