NIRMA UNIVERSITY
SCHOOL OF TECHNOLOGY, INSTITUTE OF TECHNOLOGY
Course Syllabus
Master of Computer Application (2-Years Programme) Semester-II

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Course Code	**6CS154**
Course Title	**Python Programming**

Course Outcomes:

At the end of the course, students will be able to -

1. identify suitable libraries of python to apply for various computational problems
2. design and develop applications using various object oriented concepts of python
3. apply modern tools for designing and developing GUI applications
4. apply the knowledge of python in applications related to data science and data visualization

Syllabus: **Lab hours:**

Unit I **6**

Introduction to python: installation of python, various ide of python program development, basic elements of python, operators, control statements and loop.

Unit II **4**

Collection in python: strings, list, array, tuple, set, dictionary.

Unit III **10**

Functions in python: introduction to functions in python, type of scope, scope of variables in function, memory management in python, recursive functions, various built in functions in python, math library, string functions, list functions, dictionary functions, date and time handling functions, module and packages in python.

Unit IV **6**

Testing, debugging, exception handling and file handling: various testing in python, **exception** handling in python, user defined exceptions, reading text from a file, writing text into file.

Unit V **12**

OOP in python: class in python, object in python, python inheritance, multiple inheritance, polymorphism in python, operator overloading, multi-threading in python, connecting with database in python.

Unit VI **14**

Libraries in python: introduction to various libraries in python, array computing and curve plotting, vectors and higher-dimensional arrays, matrices, numPy, sciPy and Matplotlib. Data alignment, aggregation, summarization, computation and analysis with Pandas. Statistical data analysis, image processing, web development and hardware interfacing using Python

Unit VII **08**

Graphics and gui programming: drawing using turtle, tkinter and python, other GUI

Self-Study:

The self-study contents will be declared at the commencement of semester. Around 10% of the questions will be asked from self-study contents.

Laboratory Work:

Laboratory work will be based on above syllabus with minimum 8 experiments to be incorporated that will be considered for evaluation.

Suggested Readings^:

1. R Nageshwara Rao, Core Python Programming, dreamtech
2. Mohit Raj, Python for Developers, BPB publications
3. David Beazley and Brian Jones, Python CookBook: Recipes for Mastering Python 3, O'Reilly
4. Wesley J. Chun, Core Python Programming, Prentice Hall
5. William McKinney, Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython, O' Reilly
6. Kenneth A Lambert, Fundamentals of Python- First Programs, Cengage Publication
7. Burkhard Meier , Python GUI Programming Cookbook, Packt Publication

L=Lecture, T=Tutorial, P=Practical, C=Credit

^this is not an exhaustive list