

Programming with Python

1.1 Course Number: CS211

1.2 Contact Hours: 3-0-2 Credits: 11

1.3 Semester-offered: 2nd Year- Odd

1.4 Prerequisite: Computer programming

1.1 Syllabus Committee Member: Dr. Sushum Biswas, Dr. Daya Sagar Gupta & Dr. Gargi Srivastava

2. **Objective:** To make students familiar with some scripting languages and associated tools.

3. **Course Content:**

Unit-wise distribution of content and number of lectures

| Unit | Topics | Sub-topic | Lectures |
|------|---|--|----------|
| 1 | Introduction to Python and Computer Programming | Python - a tool, More than one Python, start Python | 1 |
| 2 | Data Types, Variables, Basic Input-Output Operations, Basic Operators | Your first program, Python literals, Operators - data manipulation tools, Variables - data-shaped boxes, How to talk to computer? | 3 |
| 3 | Boolean Values, Conditional Execution, Loops, Lists and List Processing, Logical and Bitwise Operations | Making decisions in Python, Python's loops, Logic and bit operations in Python, Lists - collections of data, Sorting simple lists - the bubble sort algorithm, Lists - some more details, Lists in advanced applications | 3 |
| 4 | Functions, Tuples, Dictionaries, and Data Processing | Writing functions in Python, How functions communicate with their environment?, Returning a result from a function, Scopes in Python, functions, Tuples and dictionaries | 3 |
| 5 | Modules, Packages, String and List | Using modules, Some useful modules, What is a package? Errors, The anatomy of exception, Some of the most useful exceptions, Characters and strings vs. computers, Python's nature of strings, String methods | 4 |

| | | | |
|---|------------------------------|---|-----------|
| | Methods, and Exceptions | Strings in action, Four simple programs | |
| 6 | The Object-Oriented Approach | Classes, Methods, Objects, and the Standard Objective Features; Exception Handling, and Working with Files Basic concepts of object programming, procedural to object approach, Properties, Methods, Inheritance, Exceptions, Generators and closures, Processing files, Working with real files | 6 |
| | | Total | 20 |

4. Readings

4.1 Textbook: No specific book

4.2 Reference books:

Introduction to Computation and Programming Using Python. John V. Guttag. MIT Press.

5 Outcome of the Course: Students who complete the course will be able to accomplish coding tasks related to the basics of programming in the Python language, and to understand the fundamental notions and techniques used in object-oriented programming.