FIRST YEAR OF BACHELOR OF SCIENCE MINOR PHYSICS REVISED SYLLABUS ACCORDING TO CBCS NEP2020

COURSE TITLE: PROGRAMMING WITH PYTHON-I
SEMESTER-I
W.E.F. 2023-2024

RECOMMENDED BY THE BOARD OF STUDIES IN PHYSICS
AND
APPROVED BY THE ACADEMIC COUNCIL

Devrukh Shikshan Prasarak Mandal's
Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh. Tal.Sangmeshwar, Dist. Ratnagiri-415804, Maharashtra, India

Academic Council Item No: **03 dated 8 July 2023**

Name of the Implementing Institute	:	Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh. Tal. Sangmeshwar, Dist. Ratnagiri-415804,
Name of the Parent University	:	University of Mumbai
Name of the Programme	:	Bachelor of Science
Name of the Department	:	Physics
Name of the Class	:	First Year
Semester	:	First
Paper	:	II
No. of Credits	:	02
Title of the Course	:	Programming with Python – I
Course Code	:	S105PHT
Name of the Vertical in adherence to NEP 2020	:	Minor
Eligibility for Admission	:	Any 12^{th} Pass seeking Admission to Degree Programme in adherence to Rules and Regulations of the University of Mumbai and Government of Maharashtra
Passing Marks	:	40%
Mode of Assessment	:	Formative and Summative
Level	:	UG
Pattern of Marks Distribution for SEE and CIA	:	60:40
Status	:	NEP-CBCS
To be implemented from Academic Year	:	2023-2024
Ordinances /Regulations (if any)		

Syllabus for First Year of Bachelor of Science

(With effect from the academic year 2023-2024)

SEMESTER-I **Paper No.– Minor(CS) – II**

Course Title: Programming in Python-I **No. of Credits – 02**

Type of Vertical: Minor **COURSE CODE: S105PHT**

Learning Outcomes Based on BLOOM's Taxonomy:

After completing the course, the learner will be able to…

Course Learning Outcome No.	Blooms Taxonomy	Course Learning Outcome
CLO-01	Remember	Know basic concepts of programming concepts.
CLO-02	Understand	Understand about basic constructs of programming such as data, operations, conditions, loops, functions etc.
CLO-03	Apply	Develop flowcharts for problem solving
CLO-04	Analyze	Develop logic for Problem Solving.
CLO-05	Evaluate	Find out output of python code snippets
CLO-06	Create	Write simple python programs involving control structures

Syllabus for First Year of Bachelor of Science

(With effect from the academic year 2023-2024)

SEMESTER-I **Paper No.– Minor(CS) – II**

Course Title: Programming in Python-I **No. of Credits – 02**

Type of Vertical: Minor **COURSE CODE: S105PHT**

COURSE CONTENT			
Module	**Content**	**Credits**	**No. of Lectures**
1	**Introduction to Python:** Introduction to IDLE and other IDEs. Python shell, ipython. Accessing documentation. Expression evaluation: similarities and differences compared to a calculator; expressions and operators of types int, float, boolean. Built-in function type. Operator precedence. Enumeration of simple and compound statements. The expression statement. The assert statement, whose operand is a boolean expression (values true or false). The assignment statement, dynamic binding of names to values, (type is associated with data and not with names); automatic and implicit declaration of variable names with the assignment statement; assigning the value None to a name. The del (delete) statement. Input/output with print and input functions. A statement list (semicolon-separated list of simple statements on a single line) as a single interpreter command. The import statement for already-defined functions and constants. The augmented assignment statement. The built-inhelp() function. Interactive and script modes of IDLE, running a script, restarting the shell. The compound statement def to define functions; the role of indentation for delimiting the body of a compound statement; calling a previously defined function. Compound data types str, tuple and list (enclosed in quotes, parentheses and brackets, respectively). Indexing individual elements within these types. Strings and tuples are immutable, lists are mutable. Built-in functions min, max, sum. Interactive solution of model problems, (e.g., finding the square root of a number or zero of a function), by repeatedly executing the body of a loop (where the body is a statement list). **Function:** Advantages of function, function parameters, formal parameters, actual parameters, global and local variables.	**01**	**15**
2	**Conditional statement:** if, if-else, if-elif-else. **Iterative statements**: The range function, for statement, while, while-else, for-else. The continue statement to skip over one iteration of a loop, the break statement to exit the loop.	**01**	**15**

	Nested compound statements. Dictionaries: concept of key-value pairs, techniques to create, update and delete dictionary items. Problem-solving using compound types and statements. Anonymous functions, List comprehensions. Gentle introduction to object-oriented programming; using the built-in dir() function Enumerate the methods of strings, tuples, lists, dictionaries. Using these methods for problem-solving with compound types.		
	Total	**02**	**30**

Note:- The introductory and practical oriented portion of most of the topics will be taught in flipped classroom mode.

Reference book:

Magnus Lie Hetland, Beginning Python: From Novice to Professional, Apress
Paul Gries, et al., Practical Programming: An Introduction to Computer Science Using Python 3, Pragmatic Bookshelf, 2/E 2014

Text book:

Techmax publication book

Additional References:

Charles Dierbach, Introduction to Computer Science using Python, Wiley, 2013
Paul Gries , Jennifer Campbell, Jason Montojo, Practical Programming: An Introduction to Computer Science Using Python 3, Pragmatic Bookshelf, 2/E 2014
Adesh Pandey, Programming Languages – Principles and Paradigms, Narosa, 2008
Website : https://www.w3schools.com/python/

Access to the Course

The course is available for all the students admitted for Bachelor of Science.

Methods of Assessment

The assessment pattern would be 60:40, 60% for Semester End Examination (SEE) and 40% for Continuous Internal Assessment (CIA). The structure of the SEE and CIA would be as recommended by the Board of Studies and approved by the Board of Examination and the Academic Council of the college.

Pattern of Evaluation

The Examination/Evaluation pattern shall be framed by the Board of Examination with its final approval from the Academic Council of the College.