

Course Outcomes:	Student will be able to 1. Understand programming in general; 2. Understand C programming language; 3. Write and run simple programs. 4. Compose programs for regression analysis and error analysis	
-------------------------	---	--

Programme: M. Sc. (Physics)

Course Code: PHY-524

Title of the Course: Computer programming with Python

Number of Credits: 2

Effective from AY: 2022-23

<u>Prerequisites for the course:</u>	Nil	
<u>Course Objectives:</u>	This course develops concepts of computer programming in general and introduces programming language Python.	
<u>Content:</u>	1. Fundamentals of Python: Introduction to programming in Python, installation and writing, and running Python programs on Windows and Linux	8 hours
	2. Handling data: Data types and variables, user input and output, mathematical operators	8 hours
	3. Decision making and looping: Logical expressions and operators, conditional operators, lists, for loop, while loop	12 hours
	4. Arrays and Functions: Lists, tuples, sets, special arrays, writing and calling user-defined functions,	12 hours
	5. Data plotting and fitting: scattered plots, bar plots, histograms, reading data and plotting, linear or quadratic least square fitting	10 hours
	6. Error analyses: Propagation of errors, significant figures, Gaussian distribution, mean, median, standard deviation, variance, weighted average.	10 hours
<u>Pedagogy:</u>	Lectures/ Laboratory work/self-study	
<u>References/Readings</u>	1. "Python Cookbook: Recipes for Mastering Python 3" by David Beazley and Brian K. Jones, O'Reilly	

	Media (2013) 2. "Python: The Complete Reference" by Martin C. Brown, McGraw Hill (2018)	
<u>Course Outcomes:</u>	Student will be able to 1. Understand programming in general; 2. Understand Python programming language; 3. Write and run simple programs. 4. Compose programs for plotting, regression analysis and error analysis	