

JADAVPUR UNIVERSITY  
COMPUTER AIDED DESIGN CENTRE  
Faculty Council of Engineering and Technology  
Kolkata - 700 032

**Certificate Course on  
Blockchain--Cryptographic Application with Python**

**Scope:**

Python is more powerful language , exclusively used for functional programming. Here we will cover from scratch to advanced level of python programming with the application area of blockchain. Blockchain is now booming technology , is used in education, healthcare, cyber security etc..

Course Duration: 40 hrs.

Eligibility: Higher Secondary with concept of Basic C Programming

Class Duration: Theory 2 hr / class

Lab 2 hr / class

**Program Details**

Sl. No	Topic in Details	Theory	Practical	Total Class	No. Of Days
1	Installation of Python in Windows/ Linux / MAC Include Anaconda Distribution	0	1	1	Day 1
2	Basic of Python Programming- Part-1 A. First Python Program B. Printing Statement C. Exercise D. String in Python E. Escape Character F. Variable & Types G. Python Strongly Typed Language H. Numeric Operators I. Expressions J. Coding Hands on Exercise	1	1	2	Day 2-3
3	Basic of Python Programming- Part-2 A. The str Data Types B. Negative Indexing in String C. Slicing D. Slicing with negative numbers E. Using a Step in a Slice F. Slicing Backwards G. Challenge Solutions and Slicing idioms H. String Operators I. String Formatting J. F-String K. Python 2 String Interpolation	1	1	2	Day 4-5
3	Program Flow Control A. Introduction to Block B. If Statement C. elif D. Using Debugger IntelliJ or Pycharm E. More Exercise on if,elif,else F. Code Practice - using if with strings G. Conditional Operators H. Use of and or in conditions I. Simplify Chained Comparison	1	1	2	Day 6-7

	J. For Loop K. While Loop				
4	Python List, Ranges & Tuples A. List B. Tuple C. Advanced List Concept D. What is Iterators	1	1	2	Day 8-9
5	Python Dictionaries & Sets A. Dictionary B. Ordering of dictionaries keys C. Advanced dictionary operation D. Sets	1	1	2	Day 10-11
6	Python Input/ Output A. Reading & Writing Text Files B. Writing Text Files C. Appending to Files and Challenge D. Writing Binary Files Manually E. Manipulating Data with Shelve	1	1	2	Day 12-13
7	Introduction to Blockchain A. What is Block chain B. What is Cryptocurrency C. Benefits of Using Blockchain D. Block & Python Relations	1	0	1	Day 14
8	Advanced Python Programming ( Cryptography) A. SHA B. RSA C. MD5 D. Hash	1	1	2	Day 15-16
9	Building Blocks A. How to Build Block using Python B. Hash Verification C. Concept of Solidity Programming	1	1	2	Day 17-18
10	Customized Set Up of Blockchain using REST API, Flask , etc	1	1	2	Day 19-20

Doubt Clearing Session: One Session for 1 hr at the end of program

Final Project Submission: One Day Demonstration of Project Work

**Certificate:** Completion certificate (in printed form) will be provided at the end of the course.