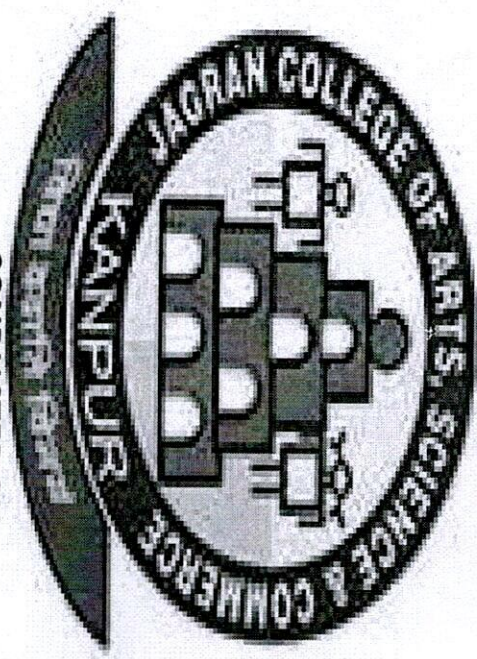# VOCATIONAL COURSE
DATA SCIENCE
USING PYTHON

CONDUCTED BY

DEPARTMENT OF COMPUTER APPLICATION

JAGRAN COLLEGE OF ARTS, SCIENCE AND COMMERCE

AFFILIATED TO

C.S.J.M. UNIVERSITY, KANPUR

620, W- BLOCK, SAKET NAGAR, KANPUR- 208014 (U.P.)

Website:jagrancollege.ac.in

Title of the course	:	Data Science using Python
Duration	:	6 months
Nodal department of HEI to run course	:	Computer Application, Jagran College of Arts, Science & Commerce, Saket Nagar, Kanpur
Broad Area/Sector	:	Data Science
Sub Sector	:	Python
Nature of the course	:	Independent
Aligned NSQF Level	:	Foundation
Name of Proposed Skill Partner	:	Arbre Creations Private Limited. Consoleflare
Job Prospects	:	Data Scientist, Data Analyst, Data Engineer, Business intelligence Analyst.

UNIT	TOPIC	GENERAL/SKILL DEVELOPMENT	THEORY/PRACTICAL/ INTERSHIP/TRAINING	NO. OF THEORY HOURS	NO. OF SKILL HOURS
UNIT 1	INTRODUCTION TO DATA SCIENCE :- o What is data science? o The importance of data science o The different types of data o The different types of data science problems o The different tools and techniques used in data science	General	Theory	4	
UNIT2	PYTHON FOR DATA SCIENCE o Introduction to Python o Python syntax o Python data types o Python functions o Python libraries for data science	General	Theory	4	
	Working with Python IDE ,Python Basics	Skill Development	Practical		5
UNIT 3	DATA MANIPULATION WITH PANDAS: Introduction to pandas, manipulation and Data Visualization with pandas	General	Theory	2	5

	Skill Development	Practical			10
☐ Working with Python Data Structure(String, List, Set, Tuple, Dictionaries). ☐ Python functions,module,package. ☐ Using Python libraries for data science ☐ Importing and exporting data with Pandas ☐ Cleaning and transforming data with Pandas ☐ Creating data visualizations with Pandas					

UNIT 4	DATA ANALYSIS WITH NumPy :- Introduction to NumPy, Numerical Computing with NumPy, Conducting statistical analysis with NumPy	General	Theory	2
	☐ Working with NumPy arrays			
	∙ Performing numerical computations with NumPy			
	∙ Conducting statistical analysis with NumPy	Skill Development	Practical	10
UNIT 5	Data Visualization with Matplotlib :- Introduction to Matplotlib, Creating basic plots with Matplotlib, Customizing plots with Matplotlib, Advanced plotting techniques with Matplotlib	General	Theory	2
	☐ Creating different types of plots with Matplotlib			
	☐ Customizing the appearance of plots with Matplotlib			
	☐ Creating interactive plots with Matplotlib	Skill Development	Practical	10
UNIT 6	Machine Learning with Scikit-Learn:- Introduction to machine learning, Supervised learning, Unsupervised learning, Evaluating machine learning models.	General	Theory	2
	○ Training and evaluating a simple machine learning model			
	○ Applying machine learning to real-world problems	Skill Development	Practical	10

Suggested Readings:
1. *Python for Data Analysis by Wes McKinney.*
2. *Hands-On Machine Learning with Scikit-Learn, Keras, and Tensor Flow.*

19/7/23

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3. Data Science from Scratch by Joel Grus.
4. Python Data Science Handbook by Jake VanderPlas.
5. Python Crash Course by Eric Matthes.
6. Head First Python by Al Sweigart.
7. Python Cookbook by David Beazley and Brain K.Jones.
8. Python for Everybody by Charles Severance.