CCEK – NSQF ALIGNED PROGRAM

COURSE SYLLABUS

FOR

Data Analysis with Python and

SQL

CCEK - NATIONAL SKILL DEVELOPMENT TRAINING PROGRAM

Data Analysis with Python and SQL

CCEK – NSDC course package covers the following Qualification Packs and leads to the following NSDC certifications. The students who successfully completed the course programs are entitled to get NSDC certification after undergoing the assessment process of NSDC as per the rules and regulations stipulated by NSDC from time to time.

SL. NO.	QUALIFICATIONS PACK	QUALIFICATIONS PACK CODE	NSQF LEVEL
1	**Data Analysis with Python and SQL** **Brief Job Description**: The role involves extracting, cleaning, analyzing, and visualizing data to uncover trends, generate actionable insights, and create reports for stakeholders.	**NIE/SSC/N1110**	**5**

COURSE DETAILS

Data Analysis with Python and SQL

EXAMINATION DETAILS

COURSE NAME	COURSE CODE	ELIGIBILITY	DURATION
Data Analysis with Python and SQL	G55	UG Pursuing	120

SL. NO.	EXAM	EXAM CODE	MAXIMUM MARK	INTERNAL	TOTAL MARK
THEORY PAPERS					
1	Foundations of Data Analysis and Relational Databases	T001	100	50	150
PRACTICAL PAPERS					
1	Python Programming for Data Processing	L001	100	50	150
TOTAL MARKS					
1	Total Examination Marks (Theory Online + Practical Examination)				200
2	Total Internal Marks				100
3	**Total Marks (Total Internal Marks + Total Examination Marks)**				**300**

Data Analysis with Python and SQL

INTERNAL MARK CRITERIA FOR EACH

SL NO.	MODULE	MODULE CODE	MAXIMUM MARK	INTERNAL MARK	TOTAL MARK
1	Foundations of Data Analysis and Relational Databases	T001	100	50	150
2	Python Programming for Data Processing	L001	100	50	150
	TOTAL		200	100	300

ATTENDANCE	GENERAL PERFORMANCE	INTERNAL EXAMINATIONS/ PROJECTS/ ASSIGNMENTS	TOTAL MARKS
5	5	40	50

COURSE SYLLABUS

FOR

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COURSE	Data Analysis with Python and SQL	
TOTAL MARKS	Mark: 300	Internal Mark: 100
TOTAL HOURS	120 Hrs	

DEFENITION OF CREDIT

1 Credit	15Hrs Theory/ 30Hrs Practical
Skill Components	60 – 70 % of Total Credit

MODULES INCLUDED IN THIS SUBJECT

SL NO	MODULE NAME	CREDIT BREAKUP
1	Module 1: Data Analysis with Python and SQL	4
	Total	4

Training Outcomes

- Participants will gain knowledge on the fundamentals of SQL and data manipulation skills.
- Improved Knowledge on schema designs, data modelling, structure of the database and the performance optimization.
- Participants will gain a strong foundation in Python and improved problem solving skills through hand-on training.
- Enhanced ability to work with Functions, Numpy and Array operations.
- Improved knowledge on Dataframes.

MODULES

Module 1: Data Analysis with Python and SQL

THEORY

- Grasp principles and pitfalls of data modeling, including Star, Snowflake, and Kimball models, for effective design.
- Understand DBMS and RDBMS concepts, covering conceptual, logical, and physical modeling, along with ACID properties.
- Learn to optimize RDBMS functionality by identifying dimensions, managing facts and fact tables, and enhancing performance.
- Gain awareness of NoSQL databases, their types, distinctions from traditional databases, and applications for handling diverse data structures.
- Develop skills in choosing optimal data models and databases, balancing trade-offs for efficient data management and scalability.

PRACTICAL

- Python Programming: Environment Setup, Basic Syntax, Hello World Program, Variable, Numbers, String, Boolean, Operators, List, Tuple, Dictionary, Decision Making, Loops
- Functions: User Defined Functions, Inbuilt Functions, Lambda Functions, Python Date And Time, Modules And Packages, Exception Handling, File I/O
- Classes And Objects: NumPy : Ndarray object, Array Creation, Array Attributes, Iterating Over Array, Array Operations, Indexing And Slicing, Array Functions, Numpy Functions Pandas : Series And DataFrames, Descriptive Statistics, Reading And Writing CSV, DataFrame Indexing And Slicing.
- DataFrame Basic Functions: DataFrame Join() And GroupBy()