

Emerging Technologies

Data Engineer Professional

Curriculum

Program Outline :

Module 1: Fundamentals of Data Engineering

1. Introduction to Data Engineering

- Core principles, tools, and industry applications.

2. Basics of Data Modeling

- Designing data structures and schemas.

3. SQL for Data Management

- Database design, querying, and data management fundamentals.

4. Introduction to Data Warehousing

- Concepts, architecture, and applications.

Module 2: Advanced Analytical Tools

5. Advanced SQL Techniques

- Complex queries, performance optimization.

6. Data Lakes and Big Data Technologies

- Implementing data lakes, using Hadoop and Spark.

7. Data Pipelines and ETL Processes

- Designing and automating data workflows.

8. Cloud Computing for Data Engineering

- Using cloud platforms for scalable data solutions.

Module 3: Practical Applications

9. Data Cleaning and Preprocessing

- Techniques for ensuring data quality and reliability.

10. Exploratory Data Analysis (EDA)

- Analyzing data distributions, identifying patterns.

11. Advanced Data Integration Techniques

- Integrating data from multiple sources.

12. Real-time Data Processing

- Implementing real-time data workflows and stream processing.

Module 4: Capstone Project

13. Integration of Learned Skills

- Apply tools and techniques to real-world problems, comprehensive solutions.

14. Advanced Machine Learning Algorithms

- Implementing and optimizing machine learning models.

15. Time Series Analysis

- Techniques for analyzing and forecasting temporal data.

16. Data Engineering for AI and ML

- Building infrastructure to support AI and ML applications.

Elective Modules

17. Data Ethics and Privacy

- Ethical considerations, privacy laws, compliance strategies.

18. Big Data Security

- Securing data in big data environments.

19. Advanced Data Warehousing

- Optimizing data warehousing solutions.

20. Predictive Analytics

- Building and validating predictive models.

21. Data Mining

- Techniques for clustering, classification, and discovery.

22. Data-Driven Decision Making

- Using data to drive business strategies and decisions.

23. Data Engineering with Apache Spark

- Advanced data processing with Spark.

24. Cloud Data Engineering

- Building and managing data solutions on the cloud.

25. Data Engineering Project Management

- Leading data engineering projects, ensuring successful delivery.

Websites:

- <https://chools.in/>
- <https://ramaqchools.com/>
- <https://www.choolsgroup.com/>