**Mastering Snowflake Syllabus**

**Module 1: Snowflake & AWS Fundamentals**

1. Introduction to Snowflake & Data Warehousing
2. Snowflake Architecture Overview
3. How to Create a Snowflake & DBT Account
4. How to Create AWS Account – Step-by-Step
5. AWS Free Tier – Setup Guide & Billing Basics
6. AWS Core Services for Snowflake (S3, EC2, IAM, etc.)
7. AWS IAM & Role-Based Access for Snowflake Integration
8. SnowSQL & Snowflake CLI Installation (Windows, Mac)

**Module 2: SQL for Snowflake (Beginner to Advanced)**

1. SQL for Snowflake – Intro, SQL Types (DDL, DML, TCL, DCL)
2. DDL – Schema and Object Creation
3. DML – Data Insertion, Update, Delete
4. DQL – SELECT, Filtering, Aggregates, Joins
5. TCL – Transaction Control in Snowflake
6. DCL – Access Control with SQL
7. Sorting, Grouping, and Window Functions in Snowflake

**Module 3: Mastering Snowflake Storage & Data Structures**

1. Table Types: Permanent, Transient, Temporary
2. Snowflake Internal vs External Stages
3. Semi-Structured Data (JSON, XML, Avro, etc.)
4. Materialized Views
5. Fail-Safe, Time Travel, and Recovery
6. Zero-Copy Cloning & Swapping
7. Understanding Data Loading with COPY INTO

**Module 4: Snowflake Virtual Warehouses & Query Optimization**

1. Overview of Virtual Warehouses
2. Sizing, Scaling & Auto Suspend/Resume
3. Query Profiling in Snowflake
4. Understanding Query Execution Plan
5. Snowflake Micro-Partitioning
6. Introduction to Clustering Keys
7. Clustering Strategy and Performance Tuning

**Module 5: Continuous Data Pipelines in Snowflake**

1. Streams – Change Data Capture
2. Tasks – Scheduling & Automation
3. Snowpipe – Auto Ingestion via S3
4. Dependency Management in Tasks
5. End-to-End Real-Time Pipeline Design

**Module 6: Security, Governance & Access Control**

1. Understanding Roles in Snowflake
2. Role-Based Access Control (RBAC)
3. Access Policies and Permissions
4. Identity Federation with AWS IAM (Optional Deep Dive)

**Module 7: Advanced Snowflake Concepts**

1. Stored Procedures (SQL and JavaScript)
2. User Defined Functions (UDFs)
3. Cloud Computing Basics (for context)
4. Swapping, Cloning, Failover Strategies
5. Working with Large Datasets – Best Practices

**Module 8: Billing, Monitoring, and Optimization**

1. Monitoring Credit Usage
2. Setting Up Resource Monitors
3. Warehouse & Query Optimization Techniques
4. Best Practices for Cost Governance

**Module 9: Capstone Project & Real-World Scenarios**

1. Create & Load Raw Data → Transform → Automate with Tasks
2. Secure with Roles, Time Travel, and Cloning
3. Share Cleaned Data Securely
4. Optimize for Cost and Performance
5. Monitor Usage and Query Plans