

Course Code	
Course Name	Programming Fundamentals

Duration (in days)	03	Proficiency Level	Fundamentals
Pre-requisites	None	Target Audience	Interns

Learning Outcome

At the end of the program, participants will be able to learn:

- SDLC + Algorithms
- Git Essentials
- Relational Database & ER Diagrams
- Introduction to SQL and Database Connection
- DDL & DML Commands
- Query Multiple Tables
- Functions & Subqueries in SQL

Day-wise Session Plan

Day	Unit	Objective(s)	Hours
1	SDLC + Algorithms	<ul style="list-style-type: none"> • Evolution of Software • Life Cycle Phases • Planning Analysis • Requirements Analysis • Design and Prototyping • Development of the Application • Testing and Deployment • Project Management • Pre-code planning • Pseudocode • Flowchart & Algorithms 	4
1	Git Essentials	<ul style="list-style-type: none"> • What is Git? • How to Install Git on Windows? • What is GitHub? • Git vs. GitHub. • What is GitLab? • Git Clone Commands • Git Push Commands • Git Pull Commands 	4
2	Relational Database & ER Diagrams	<ul style="list-style-type: none"> • DBMS, its components, and advantages • Flat-file, hierarchical, and XML database models • Levels of a DBMS architecture • Types of constraints • Normalization • First normal form • Second normal form • Third normal form • BCNF 	4

2	Introduction to SQL and Database Connection	<ul style="list-style-type: none"> • Introduction to Database, SQL and SQL Server • T SQL • SQL Commands • Creating a new Database • Data Types • Constraints 	4
3	DDL & DML Commands	<ul style="list-style-type: none"> • DDL Commands • DML Commands • Describe Table • Alter Table • Modify and Drop Clause • Data manipulation 	4
3	Query Multiple Tables	<ul style="list-style-type: none"> • Introduction to joins • Types of joins • Inner Join • Left Outer Join • Right Outer Join • Full outer Join • ANSI Join Syntax • Self-Join • Equi and non-equi Join 	2
3	Functions & Subqueries in SQL	<ul style="list-style-type: none"> • String Functions • Numeric Functions • Date Functions • Aggregate Functions • Generate Groups • SQL subqueries • Correlated & Non-correlated Subqueries 	2
		Total	24