

DART



ZETLAN TECHNOLOGIES



e-Learning Course

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COURSE MODULES

Module 1: Introduction to Dart

- What is Dart?
- Features of Dart
- Installing Dart SDK & Setup
- Running Dart Code (DartPad, CLI, VS Code)
- First Dart Program (Hello, World!)

Module 2: Dart Basics

- Variables & Data Types
- Constants (final vs const)
- Operators in Dart
- Type Inference (var, dynamic, late)
- Comments & Documentation

Module 3: Control Flow & Functions

- Conditional Statements (if-else, switch-case)
- Loops (for, while, do-while)
- Functions in Dart
 - Function Parameters & Return Types
 - Named & Optional Parameters
 - Arrow Functions
 - Higher-Order Functions

Module 4: Collections (Lists, Sets, Maps)

- Lists & List Methods
- Sets & Set Operations
- Maps (Key-Value Pairs)
- Iterating through Collections

Module 5: Object-Oriented Programming (OOP) in Dart

- Classes & Objects
- Constructors (Default, Named, Factory)
- Methods & Properties
- Encapsulation (getters & setters)
- Static Members
- Inheritance & Method Overriding
- Abstract Classes & Interfaces
- Mixins in Dart

Module 6: Exception Handling & Null Safety

- Try-Catch-Finally
- Custom Exceptions
- Null Safety (?, !, late, required)

Module 7: Asynchronous Programming

- Synchronous vs Asynchronous Programming
- Using Future and async-await
- Handling Errors in Async Code
- Streams and StreamController

Module 8: Working with Files & Packages

- Reading & Writing Files
- Using dart:io for File Operations
- Using External Packages (pub.dev)
- Managing Dependencies (pubspec.yaml)

Module 9: Introduction to Flutter (Optional)

- What is Flutter?
- Setting up Flutter with Dart
- Writing a Simple Flutter App
- Dart in Flutter (Widgets, State Management)

Module 10: Advanced Dart Topics

- Dart Isolates (Multithreading)
- Metaprogramming (Reflection)
- JSON Serialization & Deserialization
- Unit Testing in Dart (test package)