

# MOBILE APP DEVELOPMENT

Become a Mobile App Developer  
with flutter

3 Month Curriculum ( MICRO DIPLOMA)



# SYLLABUS

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## COURSE TITLE: DATA SCIENCE

DURATION: 4 MONTHS

### WEEK 1: INTRODUCTION TO BASICS

- Introduction to Dart
- What is Dart
- Why Flutter chose Dart
- Overview of Dart.Dev

#### INSTALLING THE DART SDK

- Step by Step Installation guide
- Verifying Installation

#### DART VARIABLES AND DECLARATIONS

- Variables and data types
- Literals and constants
- Concatenation and String Interpolation
- Printing to console

### WEEK 2: BUILT-IN TYPES AND NULL SAFETY

- Dart Built-in Types
- Strings
- Methods (toUpperCase, toLowerCase, length, trim, contains)
- Numbers (int, double)
- Booleans
- Lists (arrays)
- List methods and properties
- Sets
- Maps (dictionaries)
- Map methods and properties

#### TYPE OF CONVERSION

##### UNDERSTANDING DART NULL SAFETY

- Nullable and non-nullable types
- Null aware operators
- Sound null safety principles

### WEEK 3: OPERATORS AND COMMENTS

- Dart Operators
- Arithmetic Operators
- Augmented assignment operators
- Increment and Decrement operators
- Comparison operators
- Logical operators
- Conditional operators

#### COMMENTS

- Single line comments
- Multiline comments
- TODO comments
- Documentation comments

#### KEYWORDS IN DARTS

- var (type inference)
- final (runtime constant)
- const (compile-time constant)
- dynamic (dynamic type)

### WEEK 4 : FUNCTIONS AND CONTROL FLOW

- Dart Functions
- Defining and calling functions
- Parameters and return types
- Arrow functions

#### DARTS CONTROL FLOW STATEMENTS

- if and else statements
- switch and case statements
- Loops ( for loop, while loop, do-while loop for-in loop)



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## WEEK 5 : ADVANCED DART

- Dart classes in-depth
- Defining classes and objects
- Constructors
- Default and named constructors
- Methods and properties
- Inheritance and mixins
- Abstract classes and interfaces

### DART GENERICS

- Generic classes and methods
- Type constraints

### PRIVATE FIELDS AND ENCAPSULATION IN DART

- Private fields and methods
- Encapsulation principles

## WEEK 6 : SETUP AND BASICS

- Installation of Flutter
- Downloading and setting up Flutter SDK
- Setting up an IDE (VS Code, Android Studio)
- Creating an emulator/simulator

### CREATING A FLUTTER APPLICATION

- Walkthrough of pubspec.yaml
- Main function and MaterialApp
- Scaffold structure
- AppBar
- Body
- FloatingActionButton
- Text widget
- Hot reload and hot restart
- Colors and fonts customization

## WEEK 7 : WIDGETS

- Stateless and Stateful widgets
- Differences between StatelessWidget and StatefulWidget
- Lifecycle methods
- Examples of each type

### USING IMAGES, ICONS, ASSETS AND BUTTONS IN FLUTTER

- Adding images and assets
- Using Image widget
- Different types of buttons (FlatButton, RaisedButton, IconButton)
- Using icons from Icons class

## WEEK 8 : LAYOUT AND SPACE MANAGEMENT

- Space Management
- Using Padding and Margin
- Container widget properties
- width, height, color, decoration

### GRID MANAGEMENT

- Row and Column widgets
- MainAxisAlignment and CrossAxisAlignment
- Flex properties

## WEEK 9 : LIST, LOOPS AND NAVIGATION

- List and Loops
- ListView widget
- ListTile widget
- Generating list items using loops
- Using ListView.builder for dynamic lists

### MAPS AND ROUTING

- Using the map data structure
- Basic routing and navigation
- Navigator.push and Navigator.pop
- Named routes

### WEEK 10 : PACKAGES AND ERROR HANDLING

- Using Flutter Packages
- Adding packages to pubspec.yaml
- Importing and using packages
- Examples (http, provider, shared\_preferences)

#### ERROR HANDLING

- Try, Catch, and Finally blocks
- Handling asynchronous errors

### WEEK 11 : PRODUCTION BUILDING AND FIREBASE SETUP

- Production Building
- Building APK and IPA files
- Release modes and configurations

#### SETTING UP FIREBASE

- Creating a Firebase project
- Adding Firebase to Flutter app (Android & iOS)

### WEEK 12 : FIREBASE ADVANCED

- Firebase Authorization & Social Media Sign-in
- Email/Password authentication
- Phone authentication
- Integrating Google Sign-In
- Integrating Facebook Login

#### DEPLOYMENT, FILE STORAGE AND AUTHENTICATION

- Deploying to Firebase Hosting using Firebase CLI
- Using Firebase Storage
- Uploading and downloading files
- Firebase Authentication setup
- Handling user sessions
- Securing app with authentication