

## Flutter Application Development (Android ATC)

### Lesson 1: Introduction to Flutter and Dart Programming Language

- Introduction
- Importance of Flutter Introduction to Dart Writing Dart code
- DartPad
- Installing Dart SDK
- IntelliJ IDEA
- **Lab 1:** Installing Dart IDE and Writing Dart Program
  - Installing IntelliJ IDEA
  - Creating a Dart Project Using IntelliJ IDEA
  - Using DartPad

### Lesson 2: Dart Programming - Syntax

- Introduction
- main () function
- Dart Variables
- Dart Data Types
- Input of Information to Dart Program
- Writing Comments
- Dart Conditional Operators
- If Statement
- If – Else Statement
- If...Else and Else...If... Statement
- If Else and Logical Operators
- For Loops
- While Loops
- Do-while Loops
- Break Statement
- Switch Case Statement
- **Lab 2:** Create a Pizza Order Program

### Lesson 3: Dart Functions & Object-Oriented Programming (OOP)

- Functions
- Function Structure
- Creating a Function
- Function Return Data Types
- Void Function
- Function Returning Expression
- Functions and Variable Scope
- Object-Oriented Programming (OOP)
- Object
- Class

- Creating a Class
- Adding Methods to Classes
- Providing Constructors for Your Classes
- Class — Getters and Setters
- Class Inheritance
- Abstract Class
- Dart Project Structure and Dart Libraries
- **Lab 3:** Create a Small Overtime Payment Program

#### **Lesson 4: introduction to Flutter**

- Understanding Flutter
- Flutter Framework
- **Android Studio**
  - What is Android Studio?
  - Android Studio Software Prerequisite
  - Installing Android Studio
- Flutter SDK
- Installing and Configuring Flutter SDK
- Creating a New Flutter Project
- Setup an Android Virtual Device
- Run a Flutter App
- Installing Flutter on Mac
- Test Your Flutter App on iOS Phone with Windows O.S
- Android Studio Sugar and Spice
- **Run your Apps on a Hardware Device (Physical Phone)**
  - Run your Flutter App on Android Phone
  - Run your Flutter App on Android Phone
- Emulator Debug Mode
- Introduction to Flutter Widgets
- Creating a Flutter App Using Widgets
- What is a MaterialApp widget?
- **Lab 4:** Creating a Simple Flutter App

#### **Lesson 5: Flutter Widgets Fundamentals**

- Scaffold Widget
- Image Widget
- Container Widget
- Column and Row Widgets
- Icon Widget
- Layouts in Flutter
- Card Widget
- App Icons for iOS and Android Apps
- Hot Reload and Hot Restart

- Stateful and Stateless Widgets
- Use a Custom Font
- Lab: Creating a Restaurant Menu

### **Lesson 6: Navigation and Routing**

- Button Widget
- FloatingActionButton
- RaisedButton, FlatButton, and IconButton
- DropdownButton
- OutlineButton
- ButtonBar
- PopupMenuButton
- App Structure and Navigation
- Navigate to a New Screen and Back
- Navigate with Named Routes
- Send and Return Data Among Screens
- Animate a Widget Across Screens
- WebView Widget in Flutter
- **Lab 6: Navigation and Routing a Pizza Store App**

### **Lesson 7: visual, Behavioral, and Motion-Rich Widgets implementing**

- Material Design Guidelines - Part 1
- Introduction
- BottomNavigatorBar Widget
- DefaultTabController, TabBar, and TabBarView Widgets
- ListTile Widget
- ListView Widget
- Drawer Widget
- DataTable Widget
- SelectableText Widget
- Stack Widget
- **Lab: 7**
  - Lab A: Creating a Flutter App using BottomNavigatorBar Navigation Technique
  - Lab B: Using DataTable Sorting Built-in function

### **Lesson 8: visual, Behavioral, and Motion-Rich Widgets implementing**

- Material Design Guidelines - Part 2
- Input and Selections
- Text Field Widget.
- Checkbox Group and RadioButtonGroup Widgets
- Date Picker.
- Time Picker.

- Slider Widget.
- Switch Widget
- Dialogs, Alerts, and Panels
- Alert Dialog Widget
- Cupertino Alert Dialog Widget.
- Bottom Sheet.
- Modal Bottom Sheet
- Persistent Bottom Sheet.
- Expansion Panel Widget.
- Snack Bar Widget.
- **Lab 8: Creating a Hotel Reservation App.**

### **Lesson 9: Firebase**

- Introduction
- What is the JSON?
- How does Firebase Database work?
- Firebase authentication (Signup and Login to Flutter App)
- Configure Your App to use Firebase Services
- Adding Firebase to your Android App
- Adding Firebase to your iOS App
- Configuring Firebase Authentication
- Login to an App Using Firebase User Accounts
- Logout Configuration
- Firebase Database
- Which database is right for your project?
- Real Time Database
- Cloud Firestore
- **Lab 9: Create a User Profile Interface using Firebase**

### **Lesson 10: Location-Aware Apps: Using GPS and Google Maps**

- Introduction
- What is GPS and how does it work?
- The Camera Position
- Adding Google Maps to a Flutter app
- Getting a Google API key
- Adding Google Maps Flutter plug-in as a dependency
- Adding your API key for your Android app
- Adding your API key for your iOS app
- Adding a Google Map on Your Flutter App Screen
- Adding a Google Map Marker
- Google Map Types
- Moving the Camera (Camera Animation)
- Capturing an App User's Location for iOS and Android Apps.

- Lab10: Location-Aware Apps Using GPS and Google Maps
- Getting a Google API key
- Creating an App Interface
- Configuring your App to Use Your API Key
- Adding a Google Map on your Flutter App Screen
- Adding a Google Map Marker
- Flutter TM Application Development
- Capturing Users' Location
- Configuring User App's Permission

### **Lesson 11: App Testing & Publishing**

- Testing and Feedback for Your App
- Setting up a Test Environment
- Usability Testing by Participants
- Starting your Test Session
- Analyzing your Test
- Publishing Flutter Apps
- Publishing Android App on Google Play Store
- Publishing iOS app on Apple Store