

IOS Application Development using Swift

Course Duration: 40 Hours

Course code: IOS-AD

1. Course Overview

This course equips participants with the knowledge and skills to develop, test, and deploy iOS applications for iPhone and iPad using the Swift programming language. Participants will learn UI/UX design, data handling, device integration, and app deployment to the Apple App Store.

2. What you'll learn?

- Understand iOS architecture and app lifecycle.
- Program in Swift and use Xcode effectively.
- Build responsive and interactive user interfaces.
- Handle local and remote data storage.
- Integrate device features such as camera, GPS, and sensors.
- Test, debug, and optimize iOS applications.
- Deploy apps to the Apple App Store.

3. Target Audience

- Beginners and intermediate developers interested in iOS app development.
- Students and IT professionals exploring mobile development careers.
- Developers transitioning from Android or other platforms to iOS.
- Product managers and designers seeking technical understanding of iOS apps.

4. Pre-Requisites

- Basic programming knowledge (preferably in Swift, Java, or similar).
- Familiarity with object-oriented programming (OOP) concepts.
- Mac system access for Xcode development.

5. Course content

Module 1: Introduction to iOS Development

- Overview of iOS platform and ecosystem
- iOS architecture: Cocoa Touch, frameworks, runtime
- Introduction to Xcode and Interface Builder
- Creating your first iOS app

Module 2: Swift Programming Fundamentals

- Variables, constants, and data types
- Functions, classes, structs, and enums
- Control flow: loops, conditionals
- Optionals, error handling, and closures

Module 3: iOS App Fundamentals

- View Controllers and Storyboards
- UI components: Labels, Buttons, TextFields, Tables
- Navigation and Tab Bars
- Event handling and user interactions

Module 4: UI/UX Design for iOS Apps

- Human Interface Guidelines (HIG)
- Auto Layout and responsive design
- Themes, styles, and asset management
- Hands-on: Design a login and dashboard screen

Module 5: Data Handling and Storage

- UserDefaults and Keychain
- Core Data and SQLite integration
- Working with JSON and REST APIs
- Cloud data integration (Firebase, CloudKit)

- Hands-on: Build a simple CRUD app

Module 6: Device Features and Sensors

- Accessing GPS and location services
- Camera, microphone, and media handling
- Using device sensors (accelerometer, gyroscope)
- Notifications and background tasks

Module 7: Permissions, Security, and Best Practices

- Handling runtime permissions
- Data encryption and secure storage
- App optimization and best practices
- Error handling and debugging

Module 8: Testing and Debugging

- Xcode debugger and Instruments
- Unit testing and UI testing
- Testing on simulators and physical devices
- Performance monitoring and optimization

Module 9: App Deployment and Publishing

- Preparing apps for release
- Certificates, provisioning profiles, and signing
- Publishing to the Apple App Store
- App Store review guidelines and compliance

Module 10: Capstone Project

- Build a complete iOS application integrating UI, data, and device features
- Test and optimize the app for real-world usage
- Project presentation and code review

