Krishna University
Department of Computer Science
MOBILE APPLICATION DEVELOPMENT
(Certification Course)

Concepts List:

- Introduction to Mobile App Development
- Android Development Basics
- iOS Development Basics
- Cross-Platform App Development (Flutter, React Native)
- Backend Integration for Mobile Apps
- App Deployment and Publishing
- Advanced Topics (Push Notifications, In-App Purchases)

Module 1: Introduction to Mobile App Development

Evolution of Mobile Applications, Types of Mobile Applications (Native, Hybrid, Web), Mobile App Architecture Overview, Choosing the Right Development Approach, Introduction to App Stores and Marketplaces, Mobile Development Tools and IDEs, Popular Mobile Development Frameworks, Hands-on: Set Up Development Environment (Android Studio, VS Code)

Module 2: Android Development Basics

Android Studio Installation and Setup, Understanding Activities and Fragments, Layouts and Views (LinearLayout, RelativeLayout, ConstraintLayout), Intents and Navigation, Managing App Resources (Strings, Images, Styles), Introduction to RecyclerView and Adapters, Working with Local Storage (SharedPreferences, SQLite), Hands-on: Build a Simple To-Do List Android App

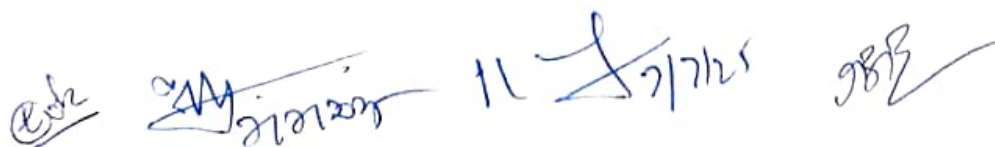### Module 3: Cross-Platform App Development (Flutter)

Introduction to Cross-Platform Development, Flutter Overview and Dart Basics, Setting Up Flutter Environments, Widgets in Flutter and Components in React Native, State Management Concepts, Hands-on: Build a Cross-Platform Weather App

Module 4: Backend Integration for Mobile Apps

Introduction to Backend Services and APIs, Firebase for Backend as a Service (BaaS), Authentication and Authorization (OAuth, Firebase Auth), Cloud Storage for Mobile Apps, Push Notifications Integration (FCM, APNs), Data Synchronization and Offline Access, Hands-on: Connect a Mobile App to Firebase Database

Module 5: Mobile App Testing Strategies

Importance of Mobile App Testing, Manual Testing vs Automated Testing, Unit Testing and UI Testing, Testing for Performance and Battery Optimization, Handling Device, Fragmentation and Screen Sizes, Hands-on: Write Unit Tests for a Mobile Application

Module 6: App Deployment and Publishing

Preparing Apps for Release (Versioning, Build Signing), Google Play Store Publishing Process, Apple App Store Publishing Guidelines, Beta Testing with TestFlight and Google Play Console, Managing App Updates and Rollbacks, App Store Optimization (ASO) Techniques, Legal and Compliance Considerations (Privacy Policies), Hands-on: Deploy a Sample App to Play Store (Test Track)

Module 7: Mobile App Security Best Practices

Common Mobile Security Threats, Secure Data Storage and Encryption, Secure Network Communication (HTTPS, SSL Pinning), Authentication and Authorization Best Practices, Preventing Reverse Engineering and Code Obfuscation, App Permissions Management, Best Practices for Handling Sensitive Information, Hands-on: Implement Basic Security Features in a Mobile App

Module 8: End-to-End Mobile Apps Development Project Ideas

Personal Finance Tracker App
Track income and expenses, Visualize monthly spending trends, Cloud backup integration
Event Management and Booking App
Create and manage events, Book and reserve tickets, Push notifications for event updates
E-Commerce Mobile Application
Product browsing, cart management, and checkout, Payment gateway integration, User account and order history
Fitness and Health Tracking App
Track workouts, steps, calories, Integration with health APIs, Goal setting and achievement tracking
Online Learning Mobile Platform
Video lectures, quizzes, and assignments, User progress tracking, Notifications and reminders for upcoming sessions