

CLUSTER UNIVERSITY OF SRINAGAR

Bachelors in Information Technology

Semester: 8TH

Course Type: MINOR

Programme: UG



Course Code: UGICT22N801

Credits: 4 (Theory: 3, Practical: 1)

Contact Hrs.: 75 (Theory: 45, Practical: 30)

Max. Marks: 100

Theory External: 60; Min Marks: 24

Theory Internal: 15 Marks, Min Marks: 06

Practical External: 15 Marks, Min. Marks: 06

Practical Internal: 10 Marks, Min. Marks: 04

Title: MOBILE APPLICATION DEVELOPMENT

COURSE OBJECTIVES:

- To introduce the fundamental concepts and approaches of mobile application development.
- To familiarize students with Android architecture, development environment and Kotlin programming.
- To develop skills in designing mobile user interfaces and application navigation.
- To introduce local data storage, web services, REST APIs, JSON and cloud-based services.
- To develop practical skills in testing, packaging and deploying mobile applications.

COURSE CONTENT:

UNIT I : Mobile Application Development and Android Fundamentals

Introduction to mobile application development, characteristics and challenges of mobile applications, mobile application platforms and development approaches, native and cross-platform applications, Android architecture and features, Android Studio and development environment, Android project structure, application components, application resources and manifest file, introduction to Kotlin, basic Kotlin programming concepts, application lifecycle and activity lifecycle.

UNIT II: User Interface and Application Development

Android user interface design, layouts and views, common UI components, input controls and event handling, menus and dialogs, lists and adapters, intents and navigation, activities and fragments, notifications, responsive and adaptive user interfaces, themes and styles, basic multimedia and location-based services.

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UNIT III: Data Management, Networking and Deployment

Local data storage, Shared Preferences, SQLite and basic CRUD operations, REST APIs and HTTP communication, JSON data handling, web services, Firebase and cloud services, application permissions and basic mobile security, testing and debugging, application performance, APK generation, application signing and deployment, introduction to application publishing.

UNIT IV

- Create a **Simple Android Application** using Android Studio and Kotlin.
- Design a **User Interface** using basic layouts and UI components.
- Implement **Event Handling** using buttons, text fields and other input controls.
- Implement **Activity Navigation** using intents and multiple activities.
- Create a **Simple List-Based Application** using an adapter.
- Store and Retrieve Data using Shared Preferences or SQLite.
- Connect an Application to a **Simple REST API** and display JSON data.
- Create a **Simple Firebase Application** for storing and retrieving data.
- Test and Debug an Android Application and generate an APK.

COURSE OUTCOMES: At the end of the course student will be able to:

- Explain the fundamental concepts, platforms and approaches of mobile application development.
- Develop basic Android applications using Kotlin and Android Studio.
- Design interactive and responsive mobile user interfaces.
- Implement navigation, local data storage and database operations in mobile applications.
- Connect mobile applications with REST APIs, JSON-based services and cloud platforms.
- Test, package and deploy basic mobile applications.

Text Book

1. Dawn Griffiths and David Griffiths, Head First Android Development: A Brain-Friendly Guide, 3rd Edition, O'Reilly Media, 2021.
2. Jerome DiMarzio, Beginning Android Programming with Android Studio, 4th Edition, Wrox, 2017.

Reference Books

- John Horton, *Android Programming for Beginners*, Packt Publishing.

