**UNIVERSITY OF GHANA**

**DEPARTMENT OF COMPUTER SCIENCE**

**MOBILE DEVELOPMENT COURSE OUTLINE**

* The mobile development short course organized by the Department of Computer Science, University of Ghana is geared towards producing entry-level programming android development experience for software developers. No prior knowledge or programming experience is needed to take our course! Jump right in!

1. **INTRODUCING THE ANDROID PLATFORM**

Establishing the development environment

Analyzing components of the architecture

1. **LEVERAGING APPLICATION FUNDAMENTALS**

**Building mobile applications**

Creating activities to process user input

Implementing views to build the User Interface (UI)

Packaging applications for deployment

Developing unit tests

**Supporting asynchronous behavior**

Performing background tasks with services

Communicating with intents

1. **CREATING USER INTERFACES**

**Selecting visual components**

Building the layout

Connecting a view to an activity

Positioning form element

**Working with resource declarations**

Declaring component definitions and layouts

Handling multiple screen resolutions

Localizing applications

1. **PROCESSING USER INPUT**

**Communication with the user**

Creating and displaying Toast

Generating status bar notifications

Logging key applications events

**Interacting with the UI**

Responding to user input events

Launching activities with intents

Writing Java & Kotlin event handlers

Generating context and option menus

**Managing the activity lifecycle**

Integrating with the Android system

Persisting data in response to notifications

1. **PERSISTING APPLICATION DATA**

**Selecting storage options**

Contrasting internal and external storage locations

Saving application configuration with SharedPreferences

**Manipulating the Firebase real-time database**

Executing queries to locate information

Specifying column selections with projections

**Consuming and creating content providers**

Accessing shared data resources

Addressing content providers with URIs

1. **MAINTAINING SYSTEM RESPONSIVENESS**

**Avoiding Application Not Responding (ANR) errors**

Unloading the UI thread

Designing for asynchronous execution

**Building background services**

Launching IntentServices

Declaring services in the manifest

1. **EXCHANGING DATA OVER THE INTERNET**

**Interacting with server-side applications**

Synchronizing Android devices with servers

Communicating via HTTP clients

**Developing clients for web services**

Connecting to RESTful services

Creating and parsing JSON

1. **ENHANCING THE USER EXPERIENCE**

**Incorporating the Action Bar**

Supporting orientation and multiple screen resolutions with resources

Combining fragments into a multi-pane UI

**Leveraging geolocation and mapping capabilities**

Plotting positions on Google Maps

Establishing location through GPS, Cell-ID and WiFi

**MILESTONES FOR THIS SHORT COURSE IN MOBILE DEVELOPMENT USING ANDROID**

1. Setting Up Android Studio and other required software
2. Kotlin Basics
3. Demo project: Calculator Application
4. Layout
5. Kotlin Essentials
6. Working with Libraries
7. Project A
8. Working with RecyclerViews
9. Working with database
10. Working with Xampp server
11. Working with Google Play Services (Maps, Places & Location APIs)
12. Firebase Tutorials
13. Project B
14. Publishing application to the google play store
15. Project C: {Student’s Personal Project}
16. Course Review and Exams