**Course Name: Research Methodology for Computer Science**

**Course Code: MTech...**

**Course Objectives:**

* Understand the architecture and components of Android SDK
* Understand use of Tools/Technologies like ANDROID Studio [Latest Version] ANDROID Version [Jelly Bean and later] for application development
* Create mobile applications on the Android Platform with advanced functionalities
* Understand process of monetizing and publishing applications

**Prerequisites:**

Knowledge of the Core Java Programming, database concepts

**Contents:**

1. **An overview of the android platform**

Introducing android; setting up your android development environment; writing your first android application; android application basics; understanding the anatomy of an android application; defining your application using the android manifest file; managing application resources ;android’s underlying architecture ;security and permissions; setting up your android development environment; configuring your development environment; configuring your operating system for device debugging ;configuring your android hardware for debugging; exploring the android SDK

1. **Understanding the anatomy of an android application**;

Mastering important android terminology; performing application tasks with activities; organizing activity components with fragments; managing activity transitions with intents; working with services; receiving and broadcasting intents; Configuring android applications using the android manifest file; managing your application’s identity; enforcing application system requirements; registering activities in the android manifest; working with permissions; exploring other manifest file settings

1. **Managing application resources**; Creating resources ;simple values ; styles and themes ; drawables ; layouts ; animations ; menus ; using resources ; using resources in code ; referencing resources within resources ; using system resources ; referring to styles in the current theme ; creating resources for different languages and hardware ; runtime configuration changes; The android application lifecycle; understanding an application’s priority and its process’ states; introducing the android application class
2. **Android user interface fundamentals**

Assigning user interfaces to activities; introducing layouts; introducing fragments; the android widget toolbox; creating new views; introducing adapters; working with dialogs and dialog fragments

1. **Drawing and animations**

Working with animations; tweened view animations; creating and using frame-by-frame animations; advanced canvas drawing; introducing the surface view; creating interactive controls; advanced drawable resources; copy, paste, and the clipboard

1. **Working with files and directories**

Exploring with the android application directories; working with other directories and files on the android file system;

1. **Databases and content providers**

Introducing android databases; sqlite databases and content providers. Introducing sqlite content values and cursors; working with sqlite databases; exploring android’s content providers; modifying content provider data; using third-party content providers

1. **Working in background**

Introducing services, using background threads, using alarms enhancing user experience introduction and addition of action bar, menus and dialogs,

1. **Hardware sensors**

Using sensors and the sensor manager; monitoring a device’s movement and orientation; introducing the environmental sensors; maps, geocoding, and location-based services; using location-based services; using the emulator with location-based services; using proximity alerts; creating map-based activities;

1. **Multimedia and wireless networking and telephony**

Playing audio and video; manipulating raw audio; creating a sound pool; using audio eff ects; using the camera for taking pictures; recording video; using bluetoothmanaging network and internet connectivity; managing wi-fitransferring data using wi-fi direct; near field communication; hardware support for telephony; introducing sms and mms

1. **Monetizing, promoting, and distributing applications**

Signing and Publishing Applications; Distributing Applications; An Introduction to Monetizing Your Applications; Application Marketing, Promotion, and Distribution Strategies; Analytics and Referral Tracking

**Reference books**

1. Reto Meier Professional ANDROID Application Development, WROX Latest Edition
2. Lauren Darcey and Shane Conder, “Android Wireless Application Development”, Pearson Education,
3. Mark L Murphy, “Beginning Android”, Wiley India Pvt Ltd (2009)
4. Josh Skeen, David Greenhalgh , “Android Programming: The Big Nerd Ranch Guide”
5. John Horton, “ Android Programming for beginners