

**MANAV RACHNA UNIVERSITY**

**Established, vide Haryana Act no.26 of 2014**

**(Formerly Manav Rachna College of Engineering,**

**NAAC Accredited ‘A’ Grade Institute)**

**Manav Rachna University**

**Faculty of Engineering**

**Department Of Computer Science & Technology**

**Syllabus**

**Mobile Computing with Android (CSH319) T & P**

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| **Course Title/ Code** | **Mobile Computing with Android (CSH319) T & P** |
| **Course Type:** | **Elective** |
| **Course Nature:** | Hard Course |
| **L-T-P-O Structure** | (3-1-2-0) |
| **Objectives** | Students would be able to develop Android applications |

# Section-A

**Get started with Kotlin:** Kotlin basics, installing IntelliJ IDEA, understanding project structure in Kotlin, Kotlin functions, classes and inheritance, interface, lambdas, higher order functions, and extension functions. Android Introduction: Android ecosystem, building blocks, framework architecture, installing Android Studio and AVD, understanding project structure, android resources, building your first app.

# Section –B

**Android application UI and Architecture:** Creating activities and fragments and their lifecycle, understanding Implicit and Explicit**,** Manifest File use. User interfaces and layouts (Linear, Relative, and Constraint), layout properties, data binding, creating navigation graphs, and navigating between screens in an Android app. Architecture: UI layers, persistence.

# Section-C

**Android Menu, Background operation and Testing:** Component Event Handle, Component Focus, Threads, Menu: Appbar with Option menu, Contextual menu, Pop Menu, Sub menu, and menu via XML and Code, Dialog, Navigation: Back & Hierarchy, Array & Base Adapters. Custom List View, Grid View using adapters & Recycler View, Styles and Themes, Adaptive Layout and Resource. Testing using TestCase Class / Espresso. **Background Operation:** AsyncTask and AsyncTaskLoader, Broadcast Receivers, Service, Notification.

**Section-D**

**Databases and Animations**: Storing Options: Shared Preference, Internal & External Storage, SQLite, SQLite Operation, and Sharing Data between Applications with Content Providers and Content Resolver. Working with Cursors: Inserts, Update and delete. Reading and Updating Contacts, Reading Bookmarks. Graphics and Animation: Custom views, Canvas, animation APIs, Multimedia: Audio, Video. Permission, performance and Security. Firebase feature and App publish.

**LIST OF EXPERIMENTS:**

1. Installation and setup of java development kit(JDK),setup android SDK,setup eclipse IDE,setup android development tools (ADT) plugins,create android virtual device.
2. Creating basic kotlin programs.
3. Create “Hello World” application. That will display “Hello World” in the middle of the screen using TextView Widget in the red color.
4. Create application for demonstration of android activity life cycle and Scroll View in Android.
5. Create an application for demonstration of Relative and Table Layout in android.
6. Create Registration page to demonstration of Basic widgets available in android.
7. Create sample application with login module.(Check username and password). On successful login, ChangeTextView “Login Successful”. And on failing login, alert user using Toast “Login fail.
8. Create login application where you will have to validate username and passwords till the username and password is not validated, login button should remain disabled.
9. Create an application to run Explicit Activity using Intent.
10. Create an application that will get the Text entered in Edit Text and display that text using Toast.
11. Create an application that will pass two numbers using TextView to the next screen, and on the next screen display the sum of that number.
12. Create an application to Demonstrate Dialog Box Control In Android.
13. Create an UI such that one screen have list of all the types of cars. On selecting any car name, next screen should show Car details like: name, launched date, Company name using database connectivity.
14. Run audio file in the background of previous application.
15. Animate an image view when it is clicked.

**Text Books:**

1. Dawn Griffiths, David Griffiths, “Head First Kotlin”, O'Reilly Media, Inc., ISBN: 9781491996690
2. John Horton, “Android Programming with Kotlin for Beginners”, Packt Publishing, ISBN:9781789800883, 1789800889

**Reference Book:**

1. Reto Meier, “Professional Android 2 Application Development”, Wiley India Pvt Ltd (2011).
2. Mark L Murphy, “Beginning Android”, Wiley India Pvt Ltd(2009)
3. [https://google-developer-training.github.io/android-developer-fundamentals-course-concepts-v2/index.html](about:blank)
4. https://developer.android.com/courses/kotlin-android-fundamentals/toc