

Course Code	Course Title	Credits	Lectures /Week
USCS405	Android Application Development	2	3
About the Course: This course is aimed at creating a skilled IT workforce that is focused on developing Apps for mobile and smart Android-based computing platforms. It familiarises the development of android applications using Kotlin for problems that address real-life needs ranging from intuitive UI to rich multimedia experience.			
Course Objectives: <ul style="list-style-type: none"> • Kotlin Programming Language for application development • Creating robust mobile applications on simulators and physical devices • Creating intuitive, reliable mobile apps using the android services and components • Handling data local and remote data storage • Create a seamless user interface that works with different mobile screens 			
Learning Outcomes: After successful completion of this course, students would be able to <ul style="list-style-type: none"> • Build useful mobile applications using Kotlin language on Android • Install and configure Android Studio for application development • Master basic to intermediate concepts of Kotlin required for mobile application development • Use built-in widgets and components, work with the database to store data • Master key Android programming concepts and deploy the application on Google Play 			
Unit	Topics	No of Lectures	
I	Introduction to Kotlin: Basics of Kotlin, type conversions, comments, Kotlin operators, variables in Kotlin, packages, visibility modifiers, control flow statements, Concept of OOPS in Kotlin, classes in Kotlin, delegation and extension functions, the companion object, Advanced Concepts in Kotlin: declaring and calling functions, parameters, and arguments in Kotlin, default argument, variable number of arguments, unit-returning function, explicit return type, lambda expression, coroutines, Collections in Kotlin, Mutable and Immutable Collections, Ranges, type Checks, casting concept, this expression, Null safety, exception handling, annotations App Development with Android Studio: Android Architecture, Android Application Framework, Android Virtual Device, Creating and running First Android Application, working with Physical Android Device, Adding Kotlin Files in Android Studio Basics Of Android- Application Components: Activities, Intent, and Broadcast Receiver, Services, Fragment, Activity Life Cycle, Content Provider, Widgets, and Notifications	15	

II	<p>Designing Android UI: User Interface (UI), Layout and Its Types, Layout Attribute, working with Views, Android UI Controls, Styles and Themes, Event Handler, setting up themes in Manifest and from the application, dialog in activity, using intents, fragments</p> <p>Handle Images, Listview And Menu: ImageView, ImageSwitcher, ListView, Menu, and its types, Designing menu in XML, Option menu, Context menu, popup menu, Screen Navigation, RecyclerView, Interaction of Views</p> <p>Data binding in Android-AdapterView, Spinner, Gallery view, AutotextCompleteView, screen orientation, Design the view dynamically</p> <p>Implementing Data Persistence: Data Storage-Shared Preference, Internal And External Storage Storing Data Using SQLite Databases, Content Provider, Firebase Real-Time Data</p>	15
III	<p>Graphics, Animations, and Integrating Media in Android: Drawable Class, Animation in Android, MediaPlayer API and in Android, MediaPlayer and AudioManager Class,</p> <p>Interacting With Camera and input gestures: Android Camera, Input gestures-multiple touch, swipe, drag, scroll, zoom, Recording</p> <p>Gathering Location Data:</p> <p>Managing Background Tasks: Broadcast Receivers, Services, Threads and Process, AsyncTask, JobScheduler, Manage device Awake State</p> <p>Deploying Android applications on Google Play-Publishing/Deploy the application, Versioning, signing Application</p>	15
<p>Textbooks:</p> <ol style="list-style-type: none"> 1. How to Build Android Apps with Kotlin: A hands-on guide to developing, testing, and publishing your first apps with Android, Alex Forrester, Packt Publishing, 2021 2. Android Programming: Crafting UI/UX using Kotlin, SYBGEN Learning, 2020 <p>Additional References:</p> <ol style="list-style-type: none"> 1. Head First Android Development: A Learner's Guide to Building Android Apps with Kotlin Dawn Griffiths, 3rd Edition, O'Reilly Media, 2021 2. Android Studio 4.2 Development Essentials - Kotlin Edition: Developing Android Apps Using Android Studio 4.2, Kotlin and Android Jetpack, Neil Smyth, Payload Media, 2021 3. Android Programming with Kotlin for Beginners, John Horton, Packt Publishing, 2019 4. Android Development with Kotlin: Enhance your skills for Android development using Kotlin, Marcin Moskala, Packt Publishing 		