**BAIT2073 Mobile Application Development**

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| Week | Lecture | Practical |
| 1 | Chapter 1: Introduction to Mobile Application Development | [Welcome to the course](https://codelabs.developers.google.com/codelabs/kotlin-android-training-welcome/index.html?index=..%2F..android-kotlin-fundamentals#0)  An introduction to Android Kotlin fundamentals.  [1.0 Install Android Studio](https://codelabs.developers.google.com/codelabs/kotlin-android-training-install-studio/#0)  Learn how to install Android Studio. (Optional)  Demo  [1.1 Get started](https://codelabs.developers.google.com/codelabs/kotlin-android-training-get-started/index.html?index=..%2F..android-kotlin-fundamentals#0)  Create your first mobile app - HelloWorld  Practical  [1.2 Basic app anatomy](https://codelabs.developers.google.com/codelabs/kotlin-android-training-app-anatomy/index.html?index=..%2F..android-kotlin-fundamentals#0)  Create your first mobile app using Android Studio.  [1.3 Image resources](https://codelabs.developers.google.com/codelabs/kotlin-android-training-images-compat/#0)  Learn to use image resources in an app. |
| 2 | Chapter 2.1: User Interfaces   * UI layouts * UI components * Input events | Demo  [2.1: Linear layout using the Layout Editor](https://codelabs.developers.google.com/codelabs/kotlin-android-training-linear-layout/#0)  Learn the basic UI layout and components.  Practical  [2.2 Add user interactivity](https://codelabs.developers.google.com/codelabs/kotlin-android-training-interactivity/#0)  Learn to get input from users and display output.  [10.1: Styles and themes](https://codelabs.developers.google.com/codelabs/kotlin-android-training-styles-and-themes/)  Learn to use attributes, styles, and themes to customize your app |
| 3 | Chapter 2.2: User Interfaces   * Menus * Dialogues and notifications | Demo  [2.3: Constraint layout using the Layout Editor](https://codelabs.developers.google.com/codelabs/kotlin-android-training-constraint-layout/#0)  Learn to use the Constraint layout.  Practical  [2.4 Data-binding basics](https://codelabs.developers.google.com/codelabs/kotlin-android-training-data-binding-basics/#0)  Learn to set data in UI components.  [10.2 Material Design, dimensions, and colours](https://codelabs.developers.google.com/codelabs/kotlin-android-training-material-design-dimens-colors/)  Learn to improve the UI of an app using Material components, dimensions, and colour. |
| 4 | Chapter 2.3: User Interfaces   * Fragment * Navigation * Design for everyone | Demo  [3.1 Create a fragment](https://codelabs.developers.google.com/codelabs/kotlin-android-training-create-and-add-fragment/)  Learn to create a Fragment inside an Activity  Practical  [3.2 Define navigation paths](https://codelabs.developers.google.com/codelabs/kotlin-android-training-add-navigation/)  Learn to create a navigation graph for your fragments using the Navigation library and the Navigation Editor.  [10.3 Design for everyone](https://codelabs.developers.google.com/codelabs/kotlin-android-training-design-for-everyone/)  Learn to make an app work for right-to-left languages and dark mode, and evaluate an app’s accessibility. |
| 5 | Chapter 3: Mobile Applications Models | **Prototype Presentation**  (Students shall do the following practical exercises at home)  [3.3 Start an external activity](https://codelabs.developers.google.com/codelabs/kotlin-android-training-start-external-activity/)  Learn to pass data between fragments and to create implicit intent to start an Activity.  [4.1 Lifecycles and logging](https://codelabs.developers.google.com/codelabs/kotlin-android-training-lifecycles-logging/)  Learn to trace an app execution life cycles using the log tag that is displayed in the Logcat.  [4.2 Complex lifecycle situations](https://codelabs.developers.google.com/codelabs/kotlin-android-training-complex-lifecycle/)  Learn to set up various lifecycle callback methods. Learn to save and restore data automatically when an app is closed by the user. |
| 6 | Chapter 4.1: Resources and Data Storage   * Providing and accessing resources * Shared preferences * Internal storage * External storage | Demo  [5.1 ViewModel and ViewModelProvider](https://codelabs.developers.google.com/codelabs/kotlin-android-training-view-model/)  Learn to retain UI data through device-configuration changes.  Practical  [5.2: LiveData and LiveData observers](https://codelabs.developers.google.com/codelabs/kotlin-android-training-live-data/)  Learn to communicate between UI and data. |
| 7 | Chapter 4.2: Resources and Data Storage   * Database * ViewModel and LiveData * Coroutines | Demo  [5.3: DataBinding with ViewModel and LiveData](https://codelabs.developers.google.com/codelabs/kotlin-android-training-live-data-data-binding/)  Learn to integrate ViewModel and LiveData using DataBinding.  Practical  [5.4: LiveData transformations](https://codelabs.developers.google.com/codelabs/kotlin-android-training-live-data-transformations/)  Learn to use TransFormations with LiveData.  [6.1 Create a Room database](https://codelabs.developers.google.com/codelabs/kotlin-android-training-room-database/)  Learn to create an app that store data into a database. |
| 8 | **Mid Term Test (Chapter 1 - 3)** | Practical  [6.2 Coroutines and Room](https://codelabs.developers.google.com/codelabs/kotlin-android-training-coroutines-and-room/)  Learn to use coroutines to move away database operations away from the main thread.  [6.3 Record quality and button states](https://codelabs.developers.google.com/codelabs/kotlin-android-training-quality-and-states/)  Learn to update records of a database.  [7.1 RecyclerView fundamentals](https://codelabs.developers.google.com/codelabs/kotlin-android-training-recyclerview-fundamentals/index.html?index=..%2F..android-kotlin-fundamentals#0)  Use a RecyclerView to display a long list of data. |
| 9 | Chapter 4.3: Resources and Data Storage   * Network Connection | Demo  [8.1 Getting data from the internet](https://codelabs.developers.google.com/codelabs/kotlin-android-training-internet-data/)  Learn to connect to a REST web service on the internet using the Retrofit library and get a response in JSON format.  Practical  [8.2 Loading and displaying images from the internet](http://codelabs.developers.google.com/codelabs/kotlin-android-training-internet-images/)  Learn to use the Glide library to load and display an image format web URL.  [8.3 Filtering and detail views with internet data](http://codelabs.developers.google.com/codelabs/kotlin-android-training-internet-filtering/)  Learn to use complex binding expression in an app layout file and use the Retrofit requests to a web server with query options.  [9.1 Repository](https://codelabs.developers.google.com/codelabs/kotlin-android-training-repository/index.html?index=..%2F..android-kotlin-fundamentals#0)  Instead of fetching data from a server on every launch, learn to improve the user experience for an app by using offline caching. |
| 10 | Chapter 5: Location-based Services   * Maps * Getting location data | **Lab Test (Chapter 1 - 3)**  11.1 [Map with a Marker](https://developers.google.com/maps/documentation/android-sdk/map-with-marker) (Java)  11.2 [Getting location data](https://codelabs.developers.google.com/codelabs/advanced-android-training-device-location/index.html?index=..%2F..advanced-android-training#0) (Java)  11.3 [Using Google Map in your app](https://codelabs.developers.google.com/codelabs/advanced-android-training-google-maps/index.html?index=..%2F..advanced-android-training#0) (Java) |
| 11 | Chapter 6.1: Specialised Instruments and Devices   * Camera | 12.1 [Using the Camera](https://developer.android.com/training/camera/photobasics) |
| 12 | Chapter 6.2: Specialised Instruments and Devices   * Audio capture * Media playback | 13.1 [Playing video in a VideoView](https://codelabs.developers.google.com/codelabs/advanced-android-training-video-view/index.html?index=..%2F..advanced-android-training#0) (Java) |
| 13 | Chapter 7: Mobile Application Packaging and Publication   * Preparing for publishing * Publishing on the market * Updating application | **Assignment Presentation** |
| 14 | Revision | **Assignment Presentation** |