**502-02 : Advance Mobile Computing**

Unit-1: Introduction to Kotlin

1.1 Concepts of Kotlin and its introduction.

1.2 Downloading IntelliJ and its settings.

1.3 Variables:

1.3.1 val vs. var, Byte, Short, Int, Long, Float, Double, Boolean, and Char.

1.3.2 String, Nullable variables.

1.4 Conditional statements: if and when. Difference between if and when.

1.4.1 ranges, types, values of function calls

1.5 Arrays and Lists:

1.5.1 create, modify, and access arrays

1.5.2 creating, modifying, and accessing lists

1.6 Loops (Iterative statements)

1.6.1 for and while loop.

1.6.2 break, continue and return

Unit-2: OOPS Concepts with Kotlin

2.1 Object oriented concepts:

2.1.1 Properties, methods and basics of objects and classes in Kotlin

2.1.2 Named parameters, constructors.

2.2 open classes and inheritance.

2.2.1 Named parameters and Default values

2.2.2 Open and Abstract

2.2.3 Interface

2.2.4 Getters and Setters

2.2.5 visibility of properties, methods and class

Unit-3: Kotlin Apps

3.1 Developing basic Apps using Kotlin

3.1.1 Setup Play Project, The Constraint Layout

3.1.2 Constraints and Resizing, Positioning Widgets, Inner Lines within a Widget

3.1.3 Layouts on Different Devices, Layout Designer rendering error

3.1.4 Baseline Constraints

3.2 Constraining Widgets, Add Scrolling Capabilities

3.2.1 Events and setonclicklistener

3.2.2 Fixing Kotlin Gradle Issues

3.2.3 The Activity Lifecycle

3.2.4 The Logcat Pane

3.2.5 Logging the Activity Lifecycle

3.2.6 Saving and Restoring Instance State

Unit-4: JSON Concept

4.1 Concept and Features of JSON, Similarities and difference among JSON and XML

4.2 JSON objects (with string and Numbers))

4.3 JSON Arrays and their examples:

4.3.1 Array of string, Array of Numbers, Array of Booleans, Array of objects, MultiDimensional Arrays

4.3.2 JSON comments

4.4 Building multi-screen apps:

4.4.1 Intents and their applications, types of intents,

4.4.2 Data exchange from one activity to another using intent

4.5 Working with implicit intents:

4.5.1 Opening web URLs through app

4.5.2 Sharing media from our app to other apps

Unit-5: Storing Android application data using Database and JSON [Any open-source database can be used. MySQL or SQLite is preferable]

5.1 Setting up virtual server on local computer

5.2 Connecting Android based App with Database

5.3 CRUD operations (Create, Read, Update, Delete) using APP:

5.3.1 Create and insert data to the database

5.3.2 Read, Update and Delete data from database.

5.4 Accessing user’s current location

5.5 Capturing image using device camera (ACTION\_IMAGE\_CAPTURE Intent of MediaStore class.)