



Diploma in Android Programming (DAP)

Learning Objectives:

Diploma in Android programming is a hands-on course which is designed for providing essential skills and experiences to the learners in developing applications on mobile platform. The hands-on training is effective for beginners and experienced developers for practical Android Code Application. The course suits the JAVA developers who seek a fast track to the Android API and best practices. Throughout the duration of program, the students are helped to develop a real-life application which acts as a basis for future projections. Throughout the class Eclipse and SDK are used as the development environment.

Learning Outcome:

By completion of this course a learner should be able to:

- Build and deploy their Android application.
- Learners understand the operation of the application, application lifecycle, configuration files, intents, and activities.
- The candidates get a better understanding of the components, layouts, event handling, and screen orientation.
- Learners also develop a working knowledge of the custom UI elements and positioning.
- The candidates may also have an in-depth understanding of broadcast receivers and services.

Duration: 01 Year

Total credit: 32

Code	Course Title	Credit	Counselling Sessions*	
			Theory	Practical
FIRST SEMSTER				
DAP-01	Operating System Basics	6	4	4
DAP-02	Object Oriented programing in JAVA	6	4	4
DAP-03	Fundamental of Android Programming	4	4	-
SECOND SEMESTER				
DAP-04	Android GUI Design	6	4	4
DAP-05	Android Application Development	6	4	4
DAP-06	Project Work	4	-	-

* Each Counselling Session for Theory is of 2 hours & Practical is of 3 Hours.

SEMESTER 1

Operating System Basics (DAP-01)

Block-01 (Basics of Operating System)

UNIT-01

Introduction, Operating System Concept and its Types, Function of OS, Evolution of Operating Systems, Structure of OS: Operating System Services, System components, Protection System, Operating System Services, System Calls.

Process Management: Introduction, Life Cycle of Process, Scheduler

UNIT-02

Memory Management: introduction, Concept of Paging & segmentation, Virtual Memory

UNIT-03

File: File System, file structure, Directory Structure

Block-02(Windows Operating System)

UNIT-01

Introduction to Windows, Version of Windows, Operating System Administrator, My Computer, Recycle Bin, Desktop, Drives, create a directory/folder, rename/change to a directory/folder, creating a file in a directory/folder, Make the file read only, Make the file/directory hidden, Editing a file in a directory/folder, Delete a file in a directory/folder.

UNIT-02

Listing the files in the directory, Copy a file from one directory /folder to the other, Deleting all files from a directory/folder, deleting a directory/folder

Installation Process: Formatting a hard disk and loading Operating System.

Domain, Workgroup, Active Directory, User Management, network setting, IIS Configuration

Block-03(Linux Operating System)

UNIT-01

Linux: Introduction, History of Linux, Distributions of Linux, Devices and drivers used, File System Hierarchy, The Components: Kernel, Distribution, XFree86, Sawfish, Gnome, The command-line commands, File management commands, working with Nano, Working with the help (man).

UNIT-02

SSH and X-forwarding, Managing compressed archives with zip and tar, Working with the GNU screen, How to add users and groups, Working with su, Working with sudo, Changing user password, Printing, Installing Software with Yum, Yast, Rpm, Installing Webmin.

Object oriented Programming in Java (DAP-02)

Block-01(Introduction to Java)

UNIT-01

Introduction, History of Java, Edition of Java, What is Java, Why Learn Java, Languages and Paradigms, The Basics of Java, Java Features, OOPS Concepts, Evolution of Java, How Java program works, Difference Between C++ and JAVA, Java and Internet, Java and World Wide Web, Java Support System, Java Environment, Components of JDK, Components of API (Application programming Interface)

UNIT-02

Java Program Structure, Simple Java Program, Tokens, Reserved Keywords, Identifiers, Literals, classification of Java Statements, JVM Architecture, How Does the JVM Work, Constants and Variables, Variables, Declaration of Variables, Scope of Variable, Data type, symbolic Constant, Default Values, Type Casting, Command line arguments

UNIT-03

Operators, Different types of Operators, Unary Operator, The Arithmetic Operator, The Relational Operators, The Logical Operator, Conditional Operators, The Assignment Operators, The Bitwise Operators, Special Operators, Instanceof Operator, Dot operator, new operator, Precedence of Java Operators

Keyboard input programming: Using InputStreamReader class, Scanner class, CLA, Console class

UNIT-04

Sequence Control, Implicit and Explicit Sequence Control, Control Statements, Selection Statements, if-Then Statement, If-Then-Else Statement, Switch Statement, Repetition Statements, While Statement, Do-While Loop Statements, for Loop Statements, Java Jump Statements, Break Statement, Continue Statement, Return Statements, Labeled Loop

Block-02(OOPs Concept in Java)

UNIT -01

Arrays And Strings: Introduction, Overview of Array , Need of Array, Types of Array, One dimensional Array, Two-Dimensional Array, Multidimensional Array, Strings , Concatenation of Strings, Methods for String Comparison, Methods for searching Strings, Changing the case of characters, String Buffer, String Builder

UNIT-02

Classes: Introduction, Defining a Class, Adding Variables, Adding Methods, Creating Objects, Accessing Class members, Call-by-value and call by reference, Recursion, Access Control Constructors, Method over Loading, Constructor Overloading, Garbage Collection, finalize() method, this keyword, Static Members, Nesting of Methods

UNIT-3

Inheritance: Inheritance, Single Inheritance, Multilevel Inheritance, Multiple Inheritance, Hierarchical Inheritance, Using Super, Constructor -Order of Execution in Inheritance, Overriding methods, Final variables and methods, Final Classes, Abstract methods and Classes, Containership, Visibility Control

UNIT-4

Wrapper Classes And Vectors: Introduction, Wrapper Classes, Number Class, Byte class, Short class, Integer class, Long class, Converting Numbers to and from Strings, Float class, Double class, Character class, Boolean class, Vectors, Creating a vector

Block-03(Advanced Concept in Java)

UNIT -01

Interface & Packages: Introduction, Interfaces, Defining interface, Implementing interface, Accessing interface method, Accessing interface variable, Extending interfaces, Packages, System packages, Using system packages, User defined packages, Adding class to a package, Accessing and using package

UNIT-2

Exception Handling: Introduction, Exceptions, Using try& catch, multiple catch clauses, Finally, Throw, Throws

UNIT-03

Applets: Introduction, Local & remote applets, Applet vs. applications, Writing applets, Life cycle of an applet, Creating source code of applet, Creating an executable applet, Creating applet tag, Adding applet tag to html, Running the applet, Detailed form of applet tag, Passing parameters to applet, Aligning the display, HTML tags, Getting input from user.

Fundamentals of Android Programming (DAP-03)

Block-01(Introduction to Android)

UNIT-01

Introduction, Android as a popular mobile Platform, History of Android, Features of Android, Comparison of Mobile OS, Device that run Android as OS

UNIT-02

Android Architecture, Types of mobile applications, Application Fundamentals

UNIT-03

Activity, Activity Life cycle, Activity Life cycle, Methods, Managing Activities in the Application, Android process states

Block-02(Android Development Environment)

UNIT-01

Reasons for Android Development, Android Development Platforms, Features and Tools, Android Platform version and specific features

UNIT-02

Configuring Android Development Environment (Android Studio and Eclipse): download and complete installation process of JDK, Eclipse and Android Studio, Dealing with backward compatibility

UNIT-03

Creating first Android application, Creating a new Android project in Eclipse, Creating a new Android project in Android Studio, create a new Android virtual Device in both IDEs (Eclipse and Android Studio)., Creating and saving launch configuration, Running and debugging the app, Running on the actual device

SEMESTER 2

Android GUI Design (DAP-04)

Block-01 (Component of Android Project)

UNIT-01

Understanding the development platform: Introduction to important Android project files (AndroidManifest.xml, MainActivity.java, activity_main.xml, strings.xml, R.java)

Introduction to different Android tools (DVM and ART, AVD Manager, Android SDK Manager, Android Emulator, DDMS, The Android ADB)

Building blocks of Android application (Activity, Services, Content Providers, Broadcast Receivers), Adding permissions to the AndroidManifest.java file

UNIT-02

Views: Views, TextView, EditText, Button, RadioButton, CheckBox, ImageButton, ToggleButton, TimePicker, DatePicker, Spinner, ProgressBar, ImageView

UNIT-03

Layouts: Linear Layout, Relative Layout, WebView Layout, Measurement Units

Block-02 (Activity and its Modules)

UNIT-01

Activity: Introduction, Activity, Creating an Activity, Activity Lifecycle, Using Themes and Styles, Defining the Styles and the Themes, applying the Styles and the Themes

UNIT-02

Fragment: Creating a Fragment, Fragment Lifecycle, Fragment Transactions

UNIT-03

Intents, Menus and Dialogs: Intent, Types of Intents, Working with Intents, Linking the Activities using Intents, Intent Filters, Menus, Types of Menus, Popup Menus, Option Menu, Context Menu, Dialog, Types of Dialogs, Creating Dialogs, Creating Alert Dialog, Creating List Dialog, Creating Progress Dialog

Android Application Development (DAP-05)

Block-01 (SQL and Multimedia)

UNIT-01

Saving Data on Android Devices: Introduction, Android Storage Options, Shared Preferences, Internal Storage, External Storage, Saving Data in SQLite Databases

UNIT-02

Integrating Multimedia: Introduction to Multimedia, Audio and Video Integration into Android Application Development, Multimedia for Android Interactive Application Development, Camera functions in Android Application Development, Supported Media Formats

UNIT-03

Locating and Sensing: Introduction to Sensors, Android Sensor Framework, Identifying Sensors and sensor Capabilities, Monitoring Sensor Events, Sensor Coordinate System, Best Practices for Accessing and Using Sensors

Commonly Used Sensors, Making Your App Location-Aware, Getting the Last Known Location, Changing Location Settings, Receiving Location Updates, Adding Google Maps to Your App

Block-02 (App Development Lifecycle)

UNIT-01

Testing and Debugging: What is Testing, How to test Android Application, Unit Testing, How to setup Testing Environment, What is Debugging, Logcat

UNIT-02

Security: Introduction, Security Concerns of an Android Application, Security Provided by the OS, Information Leakage, Device management policies

UNIT-03

Publish to Android Market: Introduction, How can you obtain an Android application, App Stores, Revenue Models Google Play, Process of Publishing an Android Application

Minor Project using Android Studio (DAP-06)