Course : Android, advanced

Practical course - 4d - 28h00 - Ref. IOD
Price : 2100 € E.T.

In this course, you'll learn about the advanced aspects of Android application development, from HMI design to the use of sensors. You'll learn how to control the advanced features of Android Studio (Build Gradle, test) and use third-party libraries and services useful for development.

Teaching objectives

At the end of the training, the participant will be able to:

- Discover Android Studio development tools
- Understand the development of advanced functionalities linked to HMIs, sensors, services and threads
- Integrating third-party libraries into an Android project
- Develop, test and optimize an Android application

Intended audience
Android developers.

Prerequisites
Very good knowledge of Java. Experience in Android development required.

Practical details
Hands-on work
Practical work will be carried out in Java.

Course schedule

1) Introduction
- Android basics. Introduction to native development with NDK. JNI.
- Introduction to advanced Android Studio features (Instant Run, debugging, profiling, etc.).
- Contributions of the latest SDK. On-demand permissions.

2 Advanced development tools

- Setting up build parameters with Gradle. Understanding Build Variants.
- Enhance your source code with Lint.
- Develop and profile/monitor an application.
- APK optimization with ProGuard.

Hands-on work
Use of different tools.

3 Advanced GUI creation

- Building advanced GUIs according to Material Design guidelines. Use of styles.
- Widget mechanisms.
- OpenGL/ES presentation.

Hands-on work
Create a complex activity with fragments. Creation of a graphic application.

4 Using sensors

- Implementation of sensors. Accelerometer, proximity, temperature, luminosity, barometer, GPS...
- Parameter setting in the sensor simulator.
- Use of event simulation tools.

Hands-on work
Creation of an application integrating various sensors.

5 ContentProvider and Services

- Creating a ContentProvider. Service lifecycle. Background and foreground. Linking services and activities.
- Using threads from a service. Use Intents. Define alarms.

Hands-on work
Perform a service and control from an activity.

6 Testing an Android application

- Presentation of tools adapted to different types of testing. Reminder of JUnit.
- Simulating user interaction with Espresso.
- Setting up Android Studio for testing. Using Cloud Test Lab.
- Introducing Firebase Test Lab for Android.

Hands-on work
Test implementation with Espresso.

7   Useful libraries and services for Android development

- Use Google Play Services.
- Integrate third-party libraries into an Android project.
- Simplify access to REST resources with Retrofit.
- Master image loading with Picasso.
- Dependency injection (Dagger).

Hands-on work
Selecting and setting up bookstores.

Dates and locations

REMOTE CLASS
2026 : 17 Mar., 19 May, 8 Sep.

PARIS LA DÉFENSE
2026 : 17 Mar., 19 May, 8 Sep.