

# Course : Android, advanced

**Practical course - 4d - 28h00 - Ref. IOD**

**Price : 2470 CHF 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.

### PARTICIPANTS

Android developers.

### PREREQUISITES

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

### TRAINER QUALIFICATIONS

The experts leading the training are specialists in the covered subjects. They have been approved by our instructional teams for both their professional knowledge and their teaching ability, for each course they teach. They have at least five to ten years of experience in their field and hold (or have held) decision-making positions in companies.

### ASSESSMENT TERMS

The trainer evaluates each participant's academic progress throughout the training using multiple choice, scenarios, hands-on work and more.

Participants also complete a placement test before and after the course to measure the skills they've developed.

## 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.

## TEACHING AIDS AND TECHNICAL RESOURCES

- The main teaching aids and instructional methods used in the training are audiovisual aids, documentation and course material, hands-on application exercises and corrected exercises for practical training courses, case studies and coverage of real cases for training seminars.
- At the end of each course or seminar, ORSYS provides participants with a course evaluation questionnaire that is analysed by our instructional teams.
- A check-in sheet for each half-day of attendance is provided at the end of the training, along with a course completion certificate if the trainee attended the entire session.

## TERMS AND DEADLINES

Registration must be completed 24 hours before the start of the training.

## ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you need special accessibility accommodations? Contact Mrs. Fosse, Disability Manager, at [psh-accueil@orsys.fr](mailto:psh-accueil@orsys.fr) to review your request and its feasibility.

## 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.