Android Developer Fundamentals Lesson Plan

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***SHARED EXTERNALLY***

***Lecture hours: 36, Practical hours: 65***

# Unit 1: The Basics

**Setting up the Android Application Development Environment, Creating, Testing and Debugging Applications**

Lecture hours: 11

Practical hours: 21

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| Lesson 1. Build Your First App **This lesson covers:**  - Installing Android Studio.  - Creating an Android app project.  - Deploying the app to an emulator and a device.  - Building a layout with UI elements including a scrolling list.  - Learning where and how to get help with building applications. | Lesson hours:  5 C  9 P |
| 1.0 Intro to Android This lesson has:  **Concept:**  1.0 Intro to Android  Includes 1 slide deck and 1 reference chapter  **Practicals:**  none *(This lesson is an overview only)* | 1 C |
| 1.1 Create Your First Android App This lesson has:  **Concept:**  1.1 Create Your First Android App  Includes 1 slide deck and 1 reference chapter  **Practicals:**  1.1 Install Android Studio and Run Hello World | 1 C  2 P |
| 1.2 Layouts, Views and Resources This lesson has:  **Concept:**  1.2 Layouts, Views and Resources  Includes 1 slide deck and 1 reference chapter  **Practicals:**  1.2A Make Your First Interactive UI  1.2B Using Layouts | 1 C  2 P  2 P |
| 1.3 Text and Scrolling Views This lesson has:  **Concept:**  1.3 Text and Scrolling Views  Includes 1 slide deck and 1 reference chapter  **Practicals:**  1.3 Working with TextView Elements | 1 C  2 P |
| 1.4 Resources to Help You Learn This lesson has:  **Concept:**  1.4 Resources to Help You Learn  Includes 1 slide deck and 1 reference chapter  **Practicals:**  1.4 Learning About Available Resources | 1 C  1 P |

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| Lesson 2. Activities and Intents **This lesson covers:**  - Understanding activities, which are the major building blocks of your app's user interface.  - Understanding both implicit and explicit intents which are used to communicate between activities.  - The callback events you can implement to perform tasks in each stage of the activity lifecycle.  - How to handle activity instance. | Lesson hours:  3 C  6 P |
| 2.1 Activities and Intents This lesson has:  **Concept:**  2.1 Activities and Intents  Includes 1 slide deck and 1 reference chapter  **Practicals:**  2.1 Create and Start Activities | 1 C  2 P |
| 2.2 Activity Lifecycle and Saving State This lesson has:  **Concept:**  2.2 Activity Lifecycle and Saving State  Includes 1 slide deck and 1 reference chapter  **Practicals:**  2.2 Activity Lifecycle and Instance State | 1 C  2 P |
| 2.3 Activities and Implicit Intents This lesson has:  **Concept:**  2.3 Activities and Implicit Intents  Includes 1 slide deck and 1 reference chapter  **Practicals:**  2.3 Activities and Implicit Intents | 1 C  2 P |

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| Lesson 3. Testing, debugging, and backwards compatibility **This lesson covers:**  - Using the debugger.  - Setting and muting breakpoints.  - Unit testing your code.  - Using support libraries to ensure your app is backward compatible with previous versions of Android. | Lesson hours:  3 C  6 P |
| 3.1 Debugging Your App This lesson has:  **Concept:**  3.1 Debugging Your App  Includes 1 slide deck and 1 reference chapter  **Practicals:**  3.1 Using the Debugger | 1 C  2 P |
| 3.2 Testing Your App This lesson has:  **Concept:**  3.2 Testing Your App  Includes 1 slide deck and 1 reference chapter  **Practicals:**  3.2 Testing Apps With Unit Tests | 1 C  2 P |
| 3.3 The Android Support Library This lesson has:  **Concept:**  3.3 The Android Support Library  Includes 1 slide deck and 1 reference chapter  **Practicals:**  3.3 3.3 P: Using The Android Support Libraries | 1 C  2 P |

# Unit 2: User interface

**Create adaptive, responsive user interfaces that work across a wide range of devices.**

Lecture hours: 8

Practical hours: 16

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| Lesson 4. User interaction and intuitive navigation **This lesson covers:**  - Understanding and implementing different navigation paths through your application.  - Customizing user input methods and controls.  - Building responsive navigation.  - Using buttons for navigation. | Lesson hours:  4 C  8 P |
| 4.1 User Input Controls This lesson has:  **Concept:**  4.1 User Input Controls  Includes 1 slide deck and 1 reference chapter  **Practicals:**  4.1 Using Keyboards, Input Controls, Alerts, and Pickers | 1 C  2 P |
| 4.2 Menus This lesson has:  **Concept:**  4.2 Menus  Includes 1 slide deck and 1 reference chapter  **Practicals:**  4.2 Using An Options Menu | 1 C  2 P |
| 4.3 Screen Navigation This lesson has:  **Concept:**  4.3 Screen Navigation  Includes 1 slide deck and 1 reference chapter  **Practicals:**  4.3 Screen Navigation Using the App Bar and Tabs | 1 C  2 P |
| 4.4 RecyclerView This lesson has:  **Concept:**  4.4 RecyclerView  Includes 1 slide deck and 1 reference chapter  **Practicals:**  4.4 Create a RecyclerView | 1 C  2 P |

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| Lesson 5. Delightful user experience **This lesson covers:**  - Using themes and styles.  - Creating responsive user interfaces that use material design principles.  - Creating layouts that work on different screen sizes and orientations.  - Creating accessible and easily localizable apps. | Lesson hours:  3 C  6 P |
| 5.1 Drawables, Themes and Styles This lesson has:  **Concept:**  5.1 Drawables, Themes and Styles  Includes 1 slide deck and 1 reference chapter  **Practicals:**  5.1 Drawables, Themes and Styles | 1 C  2 P |
| 5.2 Material design This lesson has:  **Concept:**  5.2 Material design  Includes 1 slide deck and 1 reference chapter  **Practicals:**  5.2 Add cards and use material design color themes | 1 C  2 P |
| 5.3 Providing resources for adaptive layouts This lesson has:  **Concept:**  5.3 Providing resources for adaptive layouts  Includes 1 slide deck and 1 reference chapter  **Practicals:**  5.3 Supporting landscape, multiple screen sizes and localization | 1 C  2 P |

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| Lesson 6. Testing your UI **This lesson covers:**  Testing your UI | Lesson hours:  1 C  2 P |
| 6.1 Testing the user interface: This lesson has:  **Concept:**  6.1 Testing the user interface:  Includes 1 slide deck and 1 reference chapter  **Practicals:**  6.1 Use Espresso to test your UI | 1 C  2 P |

# Unit 3: Background tasks

**Perform background work and long-running tasks in Android applications**

Lecture hours: 7

Practical hours: 13

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| Lesson 7. Background tasks **This lesson covers:**  Establishing an internet connection, sending an HTTP request and parsing a JSON response. Running work asynchronously in the background. | Lesson hours:  4 C  7 P |
| 7.1 AsyncTask and AsyncTaskLoader This lesson has:  **Concept:**  7.1 AsyncTask and AsyncTaskLoader  Includes 1 slide deck and 1 reference chapter  **Practicals:**  none *(AsyncTaskLoader is included in the practical for Connect to the Internet.)*  7.1 Create an AsyncTask | 1 C  2 P |
| 7.2 Connecting to the Internet This lesson has:  **Concept:**  7.2 Connecting to the Internet  Includes 1 slide deck and 1 reference chapter  **Practicals:**  7.2 Connect to the Internet | 1 C  3 P |
| 7.3 Broadcast receivers This lesson has:  **Concept:**  7.3 Broadcast receivers  Includes 1 slide deck and 1 reference chapter  **Practicals:**  7.3 BroadcastReceiver | 1 C  2 P |
| 7.4 Services This lesson has:  **Concept:**  7.4 Services  Includes 1 slide deck and 1 reference chapter  **Practicals:**  none *(no practical)* | 1 C |

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| Lesson 8. Triggering, scheduling, and optimizing background tasks **This lesson covers:**  Scheduling and triggering background tasks. Using alarms, Job Scheduler, Broadcast Receivers. Understanding the impact of data transfer on battery power. | Lesson hours:  3 C  6 P |
| 8.1 Notifications This lesson has:  **Concept:**  8.1 Notifications  Includes 1 slide deck and 1 reference chapter  **Practicals:**  8.1 Notifications | 1 C  2 P |
| 8.2 Alarm managers This lesson has:  **Concept:**  8.2 Alarm managers  Includes 1 slide deck and 1 reference chapter  **Practicals:**  8.2 Alarm manager | 1 C  2 P |
| 8.3 Transferring data efficiently This lesson has:  **Concept:**  8.3 Transferring data efficiently  Includes 1 slide deck and 1 reference chapter  **Practicals:**  8.3 Job Scheduler | 1 C  2 P |

# Unit 4: Data -- saving, retrieving, and loading

**Storing, sharing and retrieving data in Android applications**

Lecture hours: 7

Practical hours: 15

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| Lesson 9. Shared Preferences and Settings **This lesson covers:**  Understand the different ways to store and retrieve data both in the app and externally. Use Preferences to save key value pairs. Add functionality for users to set settings. | Lesson hours:  3 C  4 P |
| 9.0 Concepts: Overview to storing data This lesson has:  **Concept:**  9.0 Concepts: Overview to storing data  Includes 1 slide deck and 1 reference chapter  **Practicals:**  none *(This lesson is an overview only)* | 1 C |
| 9.1 Shared preferences This lesson has:  **Concept:**  10.1 Shared preferences  Includes 1 slide deck and 1 reference chapter  **Practicals:**  10.1 Set and retrieve shared preferences | 1 C  2 P |
| 9.2 App settings This lesson has:  **Concept:**  10.2 App settings  Includes 1 slide deck and 1 reference chapter  **Practicals:**  10.2 Add settings to your app | 1 C  2 P |

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| Lesson 10. Storing data with SQLite **This lesson covers:**  Store and query data in Android's SQLite database. | Lesson hours:  2 C  4 P |
| 10.1 SQLite primer This lesson has:  **Concept:**  11.1 SQLite primer  Includes 1 slide deck and 1 reference chapter  **Practicals:**  none *(This lesson is an overview only)* | 1 C |
| 10.2 store data using SQLite database This lesson has:  **Concept:**  10.2 store data using SQLite database  Includes 1 slide deck and 1 reference chapter  **Practicals:**  10.2A Save user data in a database  10.2B Querying the SQLLite database | 1 C  2 P  2 P |

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| Lesson 11. Sharing Data: Content resolvers and content providers **This lesson covers:**  Using Content Resolvers and Content Providers to provide an interface into the app's data. | Lesson hours:  1 C  5 P |
| 11.1 ContentProviders This lesson has:  **Concept:**  11.1 ContentProviders  Includes 1 slide deck and 1 reference chapter  **Practicals:**  11.1A Implement a simple content provider  11.1B Add a ContentProvider to your app's database  11.1C Use a ContentResolver to share data with other apps | 1 C  2 P  2 P  1 P |

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| Lesson 12. Loading data using loaders **This lesson covers:**  Efficiently loading data provided by another app's content provider in the background and displaying it to the user, when it is ready. | Lesson hours:  1 C  2 P |
| 12.1 Using loaders to load and display data This lesson has:  **Concept:**  12.1 Using loaders to load and display data  Includes 1 slide deck and 1 reference chapter  **Practicals:**  12.1 Use a loader with a content provider | 1 C  2 P |

# Unit 5: What's Next?

**Learn how permissions, security and performance affect your app. Learn how Firebase can help you build and test your app. Learn how to include monetization strategies to make money from your app. Finally, make sure your app is ready to share with the world, and publish it.**

Lecture hours: 3

Practical hours: 0

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| Lesson 13. Permissions, performance and security **This lesson covers:**  The next steps in adding features to  your app, understanding permissions performance,  tips about monetization, and how to publish your app! | Lesson hours:  1 C  0 P |
| 13.1 Permissions, performance and security This lesson has:  **Concept:**  13.1 Permissions, performance and security  Includes 1 slide deck and 1 reference chapter  **Practicals:**  none *(This is an overview lecture, there is no practical)* | 1 C |

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| Lesson 14. Firebase and AdMob | Lesson hours:  1 C  0 P |
| 14.1 Firebase and AdMob This lesson has:  **Concept:**  14.1 Firebase and AdMob  Includes 1 slide deck and 1 reference chapter  **Practicals:**  none *(This is an overview lecture, there is no practical)* | 1 C |

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| Lesson 15. Publish! | Lesson hours:  1 C  0 P |
| 15.1 Publish your app This lesson has:  **Concept:**  16.1 Publish your app  Includes 1 slide deck and 1 reference chapter  **Practicals:**  none *(This is an overview lecture, there is no practical)* | 1 C |

That's all folks! THE END