



SCHOOL OF PROGRAMMING AND DEVELOPMENT

# Android Basics



NANODEGREE SYLLABUS

# Overview

This Nanodegree is Built in Partnership With



The goal of this Nanodegree Program is to give aspiring Android developers who are new to programming the real-world skills needed in order to accelerate their journey towards becoming a professional Android Developer.

A graduate of this program will be able to:

- Transform hand-drawn app designs into layouts using the XML markup language.
- Use Views and ViewGroups to display images and text.
- Create interactivity through button clicks and Java code.
- Comment and document your code.
- Use an external library to add audio to your app.
- Understand the power of Web APIs and how to use them.

This program is comprised of 4 courses and 4 projects. Each project you build will be an opportunity to demonstrate what you've learned in the lessons. Your completed projects will become part of a career portfolio that will demonstrate your acquired skills in Android Basics.

## Program Information



### ESTIMATED TIME TO COMPLETE

3 months; study 10 hrs/week



### LEVEL

Foundational



### PREREQUISITES

Basic computer skills, such as managing files, running programs, and using a web browser to navigate the Internet



### HARDWARE/SOFTWARE REQUIRED

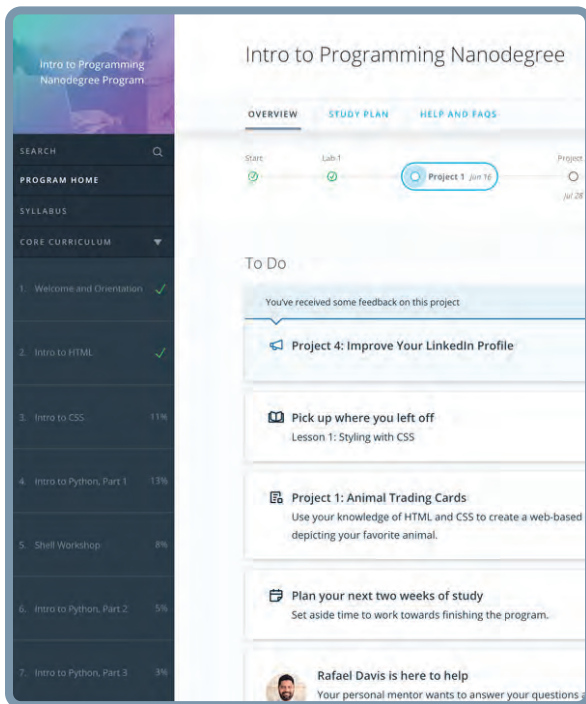
- A personal computer that is capable of running Android Studio
- Access to an Android device is helpful, but not necessary.



### LEARN MORE ABOUT THIS NANODEGREE

Contact us at [enterpriseNDs@udacity.com](mailto:enterpriseNDs@udacity.com).

# Our Classroom Experience



## REAL-WORLD PROJECTS

Learners build new skills through industry-relevant projects and receive personalized feedback from our network of 900+ project reviewers. Our simple user interface makes it easy to submit projects as often as needed and receive unlimited feedback.

## KNOWLEDGE

Answers to most questions can be found with Knowledge, our proprietary wiki. Learners can search questions asked by others and discover in real-time how to solve challenges.

## LEARNER HUB

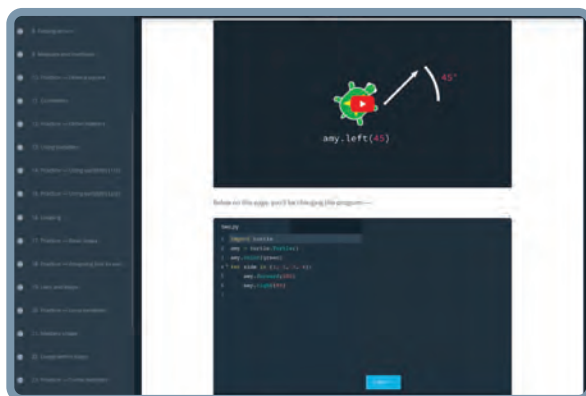
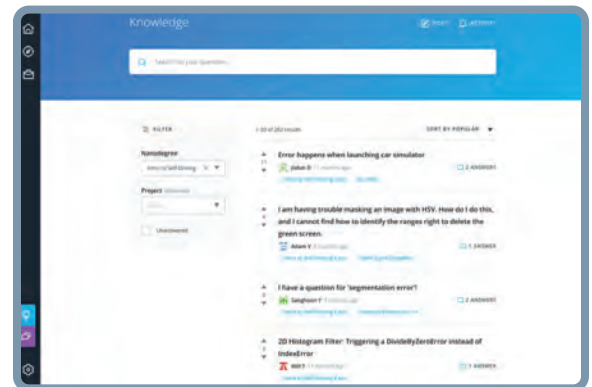
Learners leverage the power of community through a simple, yet powerful chat interface built within the classroom. Learner Hub connects learners with their technical mentor and fellow learners.

## WORKSPACES

Learners can check the output and quality of their code by testing it on interactive workspaces that are integrated into the classroom.

## QUIZZES

Understanding concepts learned during lessons is made simple with auto-graded quizzes. Learners can easily go back and brush up on concepts at anytime during the course.



## CUSTOM STUDY PLANS

Mentors create a custom study plan tailored to learners' needs. This plan keeps track of progress toward learner goals.

## PROGRESS TRACKER

Personalized milestone reminders help learners stay on track and focused as they work to complete their Nanodegree program.

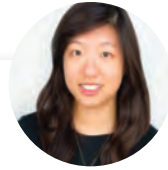
# Learn with the Best



**Katherine Kuan**

INSTRUCTOR

Katherine Kuan, formerly a Developer Advocate at Google, was a software engineer on the Android Apps team for Google Keep, Google Play, and the People app.



**Jessica Lin**

INSTRUCTOR

Jessica Lin is the Android Basics Curriculum Lead at Udacity, teaching various aspects of the Android development ecosystem. When untethered from her devices, she can be found training for her next Muay Thai competition.



**Jennie Kim Eldon**

INSTRUCTOR

Jennie Kim Eldon is the Product Lead for Android and iOS Nanodegree programs at Udacity, where she previously worked as a software engineer. Before Udacity, she served at the US State Department, leading programs for women and girls in Afghanistan.



**Asser Samak**

INSTRUCTOR

Asser Samak is a Content Developer at Udacity, with over 9 years experience in software engineering, and a great passion for teaching. He also teaches Udacity's Java course series.



**Lyla Fujiwara**

INSTRUCTOR

Lyla Fujiwara is an Android Developer Advocate at Google. Prior to joining Google, Lyla worked at Udacity on the Android Developer and Android Basics Nanodegree teams. She's taught on three continents and is a former Peace Corps volunteer.



**Joe Lewis**

INSTRUCTOR

Joe Lewis has been working with Google Analytics since 2014, and is an author of several books on web development. He is also a professionally-trained classical bassist with a masters degree from New England Conservatory and an avid mountain biker.



**Vicky Tu**

INSTRUCTOR

Vicky Tu is a Course Manager for Android Basics at Udacity, and an Android app developer. In her free time, she enjoys playing with dogs and dancing.



**Chris Lei**

INSTRUCTOR

Chris is inspired and humbled by all who embrace computing as a medium to realize their dreams. He holds an M.S in Embedded Systems and a B.S in Computer Engineering.

# Nanodegree Program Overview

## Course 1: Android Basics: User Interface

Learn how to transform hand-drawn app designs into layouts using the XML markup language, and use Views and ViewGroups to display images and text.

### Project 1

### Build a Single Screen App

Design and implement a single screen app that displays information about a fictional small business. Think along the lines of your favorite coffee shop, local restaurant, or that gem of a store that sells those rare comic books or records.

Your design must include:

- Business name
- At least one photo representing the business
- Two or more other pieces of information, such as:
  - Contact information for the business (eg phone number, email address, website)
  - Address of the Business
  - Description of business
  - Hours of operation

#### LESSON TITLE

#### LEARNING OUTCOME

##### **BUILDING LAYOUTS: PART 1**

- Create the basic structure of a single-screen app by placing layouts on a page and integrating images, buttons, and text.

##### **BUILDING LAYOUTS: PART 2**

- Group layouts to allow for more creativity and variation in your design.

# Nanodegree Program Overview

## Course 2: Android Basics: User Input

Harness the power of Java to build a coffee-ordering app, use variables to add interactivity to your app, and learn the basics of object-oriented programming.

### Project 2

### Score Keeper App

Build a Score Keeper app, which gives a user the ability to keep track of the score of two different teams playing a game of your choice.

This project is about combining various ideas and skills we've been practicing throughout the course:

- Adding button code to your app
- Updating views
- Properly scoping variables
- Finding views by their ID

### Project

### Quiz App

The Quiz App project is a chance for you to combine and practice everything you learned in this section of the Nanodegree program. You will be making your own Android app - taking it from the idea stage to building out the full app. You can share your app with family and friends, as well as with other students in this course. The goal is to create an educational app that quizzes a user about a certain topic of your choice. We want you to be creative about how you accomplish this. It's up to you to decide what the quiz questions will be about and how you want to present them to your user. (We recommend about 5-10 quiz questions for a reasonable scope of your app).

This project is about combining various ideas and skills we've been practicing throughout the course. They include:

- Planning your app design before coding.
- Taking an app layout from drawing to XML code.
- Creating, positioning, and styling views.
- Creating interactivity through button clicks and Java code.
- Commenting and documenting your code.

# Nanodegree Program Overview

LESSON TITLE	LEARNING OUTCOME
<b>MAKING AN APP INTERACTIVE: PART 1</b>	<ul style="list-style-type: none"><li>• Create interactive layouts utilizing buttons.</li></ul>
<b>MAKING AN APP INTERACTIVE: PART 2</b>	<ul style="list-style-type: none"><li>• Continue practicing creating an interactive user experience.</li></ul>
<b>OBJECT ORIENTED PROGRAMMING: PART 1</b>	<ul style="list-style-type: none"><li>• Create an object in Java and call methods on that object</li></ul>
<b>OBJECT ORIENTED PROGRAMMING: PART 2</b>	<ul style="list-style-type: none"><li>• Use booleans, conditions and relational operators, and practice adding intents and styles to your app</li></ul>

## Course 3: Android Basics: Multi-Screen Apps

Learn how to show multiple screens, and add audio and images to an app. Learn how Android handles touch events, and make visual changes to add polish to your app.

### Project 2

### Musical Structure App

The goal is to design and create the structure of a Music app. Note for this project, the app does not actually need to play music. The focus of this project is to implement Intents, new Activities, ArrayLists, Loops and Custom Classes to design the user flow of a music playing app. There are many music player apps, and it will be your job to design the Java structure to store and present the user with song information as well as the user flow through the app. Will you build an app to play music from the user's library of music? Will you build an app to stream random songs from a database? Will you build a musical suggestion engine? Those choices are up to you! This project is about combining various ideas and skills we've been practicing throughout the course. They include:

- Designing an app experience to achieve a certain goal
- Creating new activities
- Using explicit Intents to link between activities in your app
- Using OnClickListener to add behavior to buttons using Java code.
- Creating your own Custom Class
- Looping through an ArrayList
- Populating a ListView or GridView with an ArrayAdapter

# Nanodegree Program Overview

## Project

## Tour Guide App

You will be making your own multi-screen Android app to share your knowledge about a city you are very familiar with. The goal is to create a Tour Guide app which presents relevant information to a user who's visiting your city. The app can list top attractions, restaurants, public places, or events for the city. It can contain all the best known secrets that only locals know. It's up to you which categories you want to provide, as well as what information to provide in each category.

This project is about combining various ideas and skills we've been practicing throughout the course. They include:

- Planning your app design and navigation before coding
- Selecting proper data structures to store lists of information
- Building layouts to display those lists of data
- Navigating between lists in Fragments using a ViewPager or Navigation Drawer
- Creating your own Custom Class
- Properly handling images or audio (if applicable)

LESSON TITLE	LEARNING OUTCOME
<b>INTENTS AND ACTIVITIES</b>	<ul style="list-style-type: none"><li>• Use intents and activities to build our the structure of an app</li></ul>
<b>JAVA BREAK: INTERFACES</b>	<ul style="list-style-type: none"><li>• Learn how to take advantage of Interfaces - a core OOP concept in Java that makes your code more flexible.</li></ul>
<b>ARRAYS, LIST, LOOPS &amp; CUSTOM CLASSES</b>	<ul style="list-style-type: none"><li>• Learn how to use arrays, lists, and loops to populate your app</li></ul>
<b>JAVA BREAK: LOOPS</b>	<ul style="list-style-type: none"><li>• Use for and while loops to iterate over a block of code. Learn how to write nested loops. Use 2D arrays to store and retrieve information.</li></ul>
<b>QUICK GUIDE TO GRADLE</b>	<ul style="list-style-type: none"><li>• Learn how to work with gradle</li></ul>
<b>IMAGES AND VISUAL POLISH</b>	<ul style="list-style-type: none"><li>• Polish image and visuals to improve the quality of your app.</li></ul>



# Nanodegree Program Overview

LESSON TITLE	LEARNING OUTCOME
<b>ACTIVITY LIFECYCLE AND AUDIO PLAYBACK</b>	<ul style="list-style-type: none"><li>• Use an external library to add audio to your app.</li></ul>
<b>PRACTICE SET: ACTIVITY LIFECYCLE AND AUDIO PLAYBACK</b>	<ul style="list-style-type: none"><li>• Solidify your understanding of the Activity Lifecycle and Audio Playback.</li></ul>
<b>FRAGMENTS</b>	<ul style="list-style-type: none"><li>• Modify the structure of an app to make a smoother user experience.</li></ul>

## Course 4: Android Basics: Networking

Discover the power of Web APIs and how to use them, and learn the basics of networking in Android, including HTTP networking, JSON parsing, and threads.

### Project 4

### News App

Create a News feed app which gives a user regularly-updated news from the internet related to a particular topic, person, or location. The presentation of the information as well as the topic is up to you.

This project is about combining various ideas and skills we've been practicing throughout the course. They include:

- Connecting to an AP
- Parsing the JSON response
- Handling error cases gracefully.
- Updating information regularly
- Using an AsyncTask
- Doing network operations independent of the Activity lifecycle
- Use Uri.Builder class to add query parameters to the URL

LESSON TITLE	LEARNING OUTCOME
<b>JSON PARSING</b>	<ul style="list-style-type: none"><li>• Learn how to parse JSON, one of the most useful data formats.</li></ul>

# Nanodegree Program Overview

LESSON TITLE	LEARNING OUTCOME
<b>HTTP NETWORKING</b>	<ul style="list-style-type: none"><li>• Learn how to connect to the internet in your Android code.</li></ul>
<b>THREADS &amp; PARALLELISM</b>	<ul style="list-style-type: none"><li>• Learn how to use threads to make your device do multiple things at once.</li></ul>
<b>REFERENCES</b>	<ul style="list-style-type: none"><li>• Learn how to add a new Settings Activity and use the user's stored preferences to change the URL</li></ul>

# Our Nanodegree Programs Include:



## Pre-Assessments

Our in-depth workforce assessments identify your team's current level of knowledge in key areas. Results are used to generate custom learning paths designed to equip your workforce with the most applicable skill sets.



## Dashboard & Progress Reports

Our interactive dashboard (enterprise management console) allows administrators to manage employee onboarding, track course progress, perform bulk enrollments and more.



## Industry Validation & Reviews

Learners' progress and subject knowledge is tested and validated by industry experts and leaders from our advisory board. These in-depth reviews ensure your teams have achieved competency.



## Real World Hands-on Projects

Through a series of rigorous, real-world projects, your employees learn and apply new techniques, analyze results, and produce actionable insights. Project portfolios demonstrate learners' growing proficiency and subject mastery.

# Our Review Process

## Real-life Reviewers for Real-life Projects

Real-world projects are at the core of our Nanodegree programs because hands-on learning is the best way to master a new skill. Receiving relevant feedback from an industry expert is a critical part of that learning process, and infinitely more useful than that from peers or automated grading systems. Udacity has a network of over 900 experienced project reviewers who provide personalized and timely feedback to help all learners succeed.



**Vaibhav**  
UDACITY LEARNER

*"I never felt overwhelmed while pursuing the Nanodegree program due to the valuable support of the reviewers, and now I am more confident in converting my ideas to reality."*

now at  
**CODING VISIONS INFOTECH**

## All Learners Benefit From:



Line-by-line feedback for coding projects



Industry tips and best practices



Advice on additional resources to research



Unlimited submissions and feedback loops

## How it Works

Real-world projects are integrated within the classroom experience, making for a seamless review process flow.

- Go through the lessons and work on the projects that follow
- Get help from your technical mentor, if needed
- Submit your project work
- Receive personalized feedback from the reviewer
- If the submission is not satisfactory, resubmit your project
- Continue submitting and receiving feedback from the reviewer until you successfully complete your project

## About our Project Reviewers

Our expert project reviewers are evaluated against the highest standards and graded based on learners' progress. Here's how they measure up to ensure your success.

900+

### Expert Project Reviewers

Are hand-picked to provide detailed feedback on your project submissions.

1.8M

### Projects Reviewed

Our reviewers have extensive experience in guiding learners through their course projects.

3

### Hours Average Turnaround

You can resubmit your project on the same day for additional feedback.

4.85 /5

### Average Reviewer Rating

Our learners love the quality of the feedback they receive from our experienced reviewers.



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For more information visit: [www.udacity.com/enterprise](http://www.udacity.com/enterprise)