

# Postgraduate Certificate

Android Application

Programming Language:

Advanced Kotlin





## Postgraduate Certificate Android Application Programming Language: Advanced Kotlin

- » Modality: **online**
- » Duration: **6 weeks**
- » Certificate: **TECH Technological University**
- » Dedication: **16h/week**
- » Schedule: **at your own pace**
- » Exams: **online**

Website: [www.techtitute.com/pk/information-technology/postgraduate-certificate/android-application-programming-language-advanced-kotlin](http://www.techtitute.com/pk/information-technology/postgraduate-certificate/android-application-programming-language-advanced-kotlin)

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# 01

# Introduction

Keeping up to date in mobile application programming involves a close knowledge of the Kotlin language. However, mastering it can be a complex task, both for professionals who want to become specialized developers in this language, and for those who know the basics, but want to master the main techniques for creating functional and quality applications. This program not only provides advanced concepts about the Kotlin language, but also allows the student to learn immediately, from anywhere and with the guarantee of having teaching material adapted to the current reality of Android application development.





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*An advanced, practical program adapted to the needs of the student and the market that will allow you to master programming with Kotlin in 6 weeks"*

While most programming languages have been in use for decades, Kotlin is newer and therefore has some novel features aimed at improving developer productivity. This has meant that in just a few years it has become one of the main techniques used to create applications, mainly for Android and, therefore, it is becoming increasingly common to find job offers aimed at experts and professionals with demonstrable experience in this sector.

For this reason, having a Postgraduate Certificate focused on the advanced programming language of Android applications with Kotlin not only allows the graduate to broaden their knowledge and improve their professional resume, but also expands their possibilities when facing the labor market. With a complete program that focuses on the most important features, structure and syntax of Kotlin, this title provides the keys for Android (or Kotlin in general) developers, giving the professional the best tools to progress in this field.

During the learning process, the student will learn all about advanced terms, functional programming, asynchronous computing and more concepts that will allow them, as a final result, to develop a more readable, concise and secure code.

Furthermore, TECH provides the graduate with the entire syllabus from the beginning of the program, allowing them to organize the study of the same, which will be carried out 100% online. In addition to carefully selected content adapted to the area of study, the Postgraduate Certificate will be supervised by a group of professionals in the field, who will not only contribute their experience and rigor, but will also present practical cases in which students will be able to apply everything they have learned during the course.

This **Postgraduate Certificate in Android Application Programming Language: Advanced Kotlin** contains the most complete and up-to-date educational program on the market. The most important features include:

- ◆ The development of case studies presented by experts in computer engineering focused on the programming of Android applications with Kotlin
- ◆ The graphic, schematic, and practical contents with which they are created, provide practical information on the disciplines that are essential for professional practice
- ◆ Practical exercises where the self-assessment process can be carried out to improve learning
- ◆ Its special emphasis on innovative methodologies
- ◆ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ◆ Access to content from any fixed or portable device with an Internet connection



*Learn the keys to master the Kotlin language and expand your job opportunities as a programmer"*

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*Integrate into your work the different concepts that the Kotlin language offers and create a functional model adapted to your own programming style"*

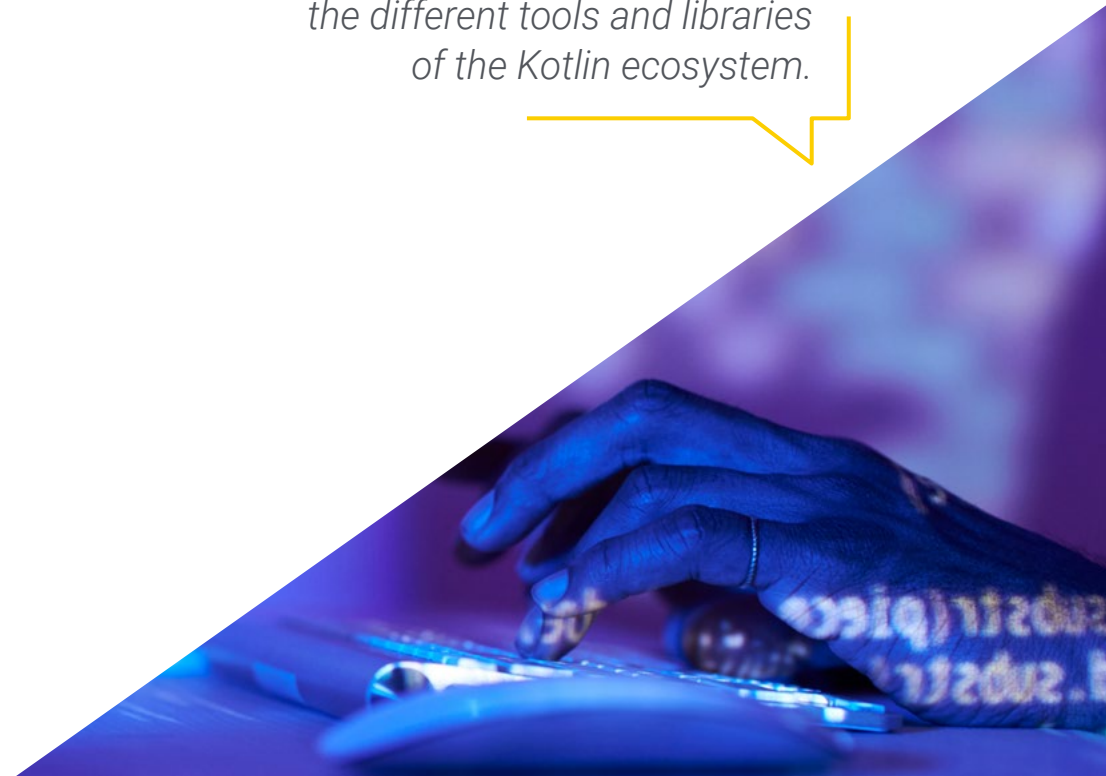
The program's teaching staff includes professionals from the sector who contribute their work experience to this program, as well as renowned specialists from leading societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive knowledge programmed to learn in real situations.

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise throughout the program. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

*Acquire advanced skills and implement the best techniques for programming applications with Kotlin language.*

*With this Postgraduate Certificate, learn how to use the different tools and libraries of the Kotlin ecosystem.*



# 02 Objectives

Knowing the complexity of the world of programming, in this case related to the development of mobile applications, TECH's goal is to offer a Postgraduate Certificate that is easy to study. At the same time, it is necessary that it meets the demand to become an expert in the sector. Therefore, the methodology used during the program, linked to the experience of the teacher involved in the program will encourage the student to set more and more demanding goals.





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*TECH's main goal is for the student to reach and exceed their own professional objectives with ease"*



## General Objectives

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- ◆ Develop advanced capabilities and best practices in application development in the Kotlin programming language
- ◆ Analyze the Genericity Model in Kotlin
- ◆ Examine the Kotlin Functional Programming Model and the Kotlin Asynchronous Programming model
- ◆ Compile the different tools and libraries of the Kotlin ecosystem



*If your goal is to finish a program knowing how to program Android applications, this Postgraduate Certificate is the perfect one for you"*





## Specific Objectives

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- ◆ Examine the covariant and contravariant genericity model in Kotlin
- ◆ Analyze Kotlin's functional programming model with Lambdas
- ◆ Define Kotlin's higher order functions
- ◆ Develop extensions and companion objects in Kotlin
- ◆ Examine the use of the delegation pattern in Kotlin
- ◆ Compile annotations and reflection in Kotlin
- ◆ Delve into the testing model in Kotlin
- ◆ Establish the different asynchronous programming models available in Kotlin
- ◆ Determine the Kotlin coroutines model
- ◆ Compile the various libraries and utility tools of the Kotlin ecosystem

03

# Course Management

TECH's teaching team meets a series of requirements: significant academic curriculum, proven experience in the sector and personal and professional quality. This guarantees an educational process in which the graduate's feedback will always be positive and productive for their professional career. In this case, learning from computer experts specialized in the development and management of applications will also give students the opportunity to discover new ideas and enrich their knowledge not only by making use of theory, but also of the teachers' own experience.



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*The expertise of our teachers will ease your path to success as a programmer specializing in Kotlin”*

## International Guest Director

Colin Lee is a **successful mobile application developer**, specializing in **native Android code**, whose influence extends internationally. The Postgraduate Diploma is an **authority in the Twin Cities area and in the handling of Kotlin**. One of his most recent contributions was to demonstrate, in live code, how to **quickly build a browser** using the aforementioned programming language and Mozilla's open source browser components for Android.

In addition, his applications have been linked to globally significant companies. For example, he was in charge of **creating digital solutions for Pearson**, one of the largest international publishers. He also developed a low-level Android video recorder for the startup Flipgrid, later acquired by Microsoft.

He also built a successful Android VPN for a large client in the **consulting world**. In turn, he is the creator of a freight management tool implemented by the transnational **Amazon** to facilitate the work of its contracted truckers. On the other hand, he has helped build the **mobile versions of the Firefox browser** for Mozilla.

Today, he performs work as a contractor, including **code reviews and security checks**. His impact on mobile application development and his experience over the years make him a leading figure in the global technology arena.



## Mr. Lee, Colin

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- Director at ColinTheShots LLC
- Android Software Engineer for Specto Inc.
- Senior Android Engineer for Mozilla
- Software Development Engineer for Amazon
- Mobile Application Engineer for Flipgrid
- Software Configuration Specialist for Pearson VUE
- Bachelor's Degree from the University of Florida

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*Thanks to TECH you will be able to learn with the best professionals in the world”*

## Management



### Mr. Olalla Bonal, Martín

- ◆ Current Blockchain Technical Specialist at IBM SPGI
- ◆ Digital Electronics Technician
- ◆ Blockchain Architect
- ◆ Infrastructure Architect in Banking
- ◆ Hyperledger Fabric training to companies
- ◆ Business-oriented companies Blockchain training
- ◆ Project management and implementation of solutions
- ◆ More than 25 years of experience in the IT world

## Professors

### Mr. Villot Guisán, Pablo

- ◆ Cloud Architect, Exponential Solutions and Subject Matter Expert Blockchain at KPMG
- ◆ Cloud Architect, Exponential Solutions and Subject Matter Expert Blockchain Integration at Everis
- ◆ Developer and Technical Manager of web and heavy desktop applications for the Commercial Logistics area of Inditex, Connectis
- ◆ Degree in Computer Engineering from the University of La Coruña
- ◆ Microsoft MSCA certification: Cloud Platform





# 04

## Structure and Content

TECH always offers programs adapted to the characteristics of the market, adjusting the content to the current demand and the needs of the professional profile. For that reason, this program has been designed taking as a reference the most up-to-date concepts of the programming sector. All linked to innovative online learning in which the most important information is reiterated, facilitating a progressive and quality acquisition of knowledge. This makes this Postgraduate Certificate the best opportunity to learn and improve professional skills immediately.





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*Become, in only 150 hours, an expert developer with Kotlin and add quality to your projects”*

## Module 1. Android Application Programming Language Advanced Kotlin Genericity, Functional Programming and Parallelism

- 1.1. Genericity in Kotlin
  - 1.1.1 Genericity in Kotlin
  - 1.1.2 Genericity in Collections, Functions, Classes and Interfaces
  - 1.1.3 Covariance and Contravariance: Out or In
- 1.2. Lambda Functions in Kotlin
  - 1.2.1 Lambda Functions
  - 1.2.2 Structure of a Lambda Function
  - 1.2.3 Use of Lambda Functions
- 1.3. Higher Order Functions in Kotlin
  - 1.3.1 Higher Order Functions
  - 1.3.2 Standard Kotlin Higher-Order Functions
  - 1.3.3 Linking Function Calls
- 1.4. Kotlin Extensions
  - 1.4.1 Kotlin Extensions
  - 1.4.2 Extension Functions
  - 1.4.3 Extension Properties
  - 1.4.4 Accompanying Objects
- 1.5. Delegation Pattern in Kotlin
  - 1.5.1 Delegation Pattern
  - 1.5.2 Delegation in Kotlin
  - 1.5.3 Delegated Properties
- 1.6. Annotations and Reflection in Kotlin
  - 1.6.1 Annotations and Reflection
  - 1.6.2 Annotations in Kotlin
  - 1.6.3 Reflection in Kotlin





- 1.7. Testing in Kotlin
  - 1.7.1 Testing in Kotlin
  - 1.7.2 Kotlin Testing Frameworks and Libraries
  - 1.7.3 Kotest
- 1.8. Asynchronous Programming in Kotlin
  - 1.8.1 Asynchronous Programming
  - 1.8.2 Asynchronous Programming Techniques in Kotlin
  - 1.8.3 Comparative Programming Techniques
- 1.9. Coroutine in Kotlin
  - 1.9.1 Coroutines
  - 1.9.2 Channels
  - 1.9.3 Context and Dispatchers
  - 1.9.4 Shared State and Concurrency
  - 1.9.5 Exception Handling in Coroutines
- 1.10. Kotlin Ecosystem
  - 1.10.1 Kotlin Ecosystem
  - 1.10.2 Libraries for Kotlin
  - 1.10.3 Tools for Kotlin

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*A complete Kotlin language program with advanced concepts and content”*

# 05 Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning**.

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.



A close-up photograph of a person's hands typing on a laptop keyboard. The image is partially obscured by a large teal diagonal graphic that covers the top right and bottom right portions of the page. The lighting is soft, highlighting the texture of the skin and the keys.

“

*Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"*

## Case Study to contextualize all content

Our program offers a revolutionary approach to developing skills and knowledge. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

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*At TECH, you will experience a learning methodology that is shaking the foundations of traditional universities around the world”*



*You will have access to a learning system based on repetition, with natural and progressive teaching throughout the entire syllabus.*





*The student will learn to solve complex situations in real business environments through collaborative activities and real cases.*

### A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch, which presents the most demanding challenges and decisions in this field, both nationally and internationally. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and professional reality is taken into account.

“*Our program prepares you to face new challenges in uncertain environments and achieve success in your career”*

The case method has been the most widely used learning system among the world's leading Information Technology schools for as long as they have existed. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question that you are presented with in the case method, an action-oriented learning method. Throughout the course, students will be presented with multiple real cases. They will have to combine all their knowledge and research, and argue and defend their ideas and decisions.

## Relearning Methodology

TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

We enhance the Case Study with the best 100% online teaching method: Relearning.

*In 2019, we obtained the best learning results of all online universities in the world.*

At TECH you will learn using a cutting-edge methodology designed to train the executives of the future. This method, at the forefront of international teaching, is called Relearning.

Our university is the only one in the world authorized to employ this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.



In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

This methodology has trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, and financial markets and instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

*Relearning will allow you to learn with less effort and better performance, involving you more in your training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for success.*

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images and memories, but we know that the place and context where we have learned something is fundamental for us to be able to remember it and store it in the hippocampus, to retain it in our long-term memory.

In this way, and in what is called neurocognitive context-dependent e-learning, the different elements in our program are connected to the context where the individual carries out their professional activity.



This program offers the best educational material, prepared with professionals in mind:



### Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



### Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



### Practising Skills and Abilities

They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



### Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.





#### Case Studies

Students will complete a selection of the best case studies chosen specifically for this program. Cases that are presented, analyzed, and supervised by the best specialists in the world.



#### Interactive Summaries

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.



# 06 Certificate

This Postgraduate Certificate in Android Application Programming Language: Advanced Kotlin guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.



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*Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork”*

This **Postgraduate Certificate in Android Application Programming Language: Advanced Kotlin** contains the most complete and up-to-date program on the market"

After the student has passed the assessments, they will receive their corresponding **Postgraduate Certificate** issued by **TECH Technological University** via tracked delivery\*.

The certificate issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Certificate, and meets the requirements commonly demanded by labor exchanges, competitive examinations and professional career evaluation committees.

Title: **Postgraduate Certificate in Android Application Programming Language: Advanced Kotlin**

Official N° of Hours: **150 h.**



\*Apostille Convention. In the event that the student wishes to have their paper certificate issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.



future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present  
development languages  
virtual classroom



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