

# Postgraduate Certificate

Android Application Programming

Language: Kotlin



## Postgraduate Certificate Android Application Programming Language: Kotlin

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

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

# Index

01

Introduction

---

*p. 4*

02

Objectives

---

*p. 8*

03

Course Management

---

*p. 12*

04

Structure and Content

---

*p. 16*

05

Methodology

---

*p. 20*

06

Certificate

---

*p. 28*

# 01

# Introduction

Kotlin is, nowadays, one of the most widely used programming languages in Android application development. This, together with the increasing number of users of phones and tablets, makes this program the perfect alternative for any computer scientist who wants to be up to date and prepared to face the new developments in programming. In addition, this program is taught entirely online and is tutored by experts in the sector, with a methodology at the forefront according to this subject of study.

```
fun main() {  
    greet("World")  
}
```

Kotlin Platform  
programming

ayground is an online sandbox to expr  
ming language. Browse code sam

“

*Learn with TECH a programming language characterized by interoperability, security, clarity and tool support"*

The large software development company JetBrains recently launched Kotlin, a language that revolutionized the world of application programming, until then mainly dominated by Java. Kotlin was born to solve many of the code problems generated by Java when developing Android applications and over time it has become one of the most widely used systems.

It is a static language, interoperable with Java, powerful, simple, lightweight and executable on any device. In addition, it has an extensive ecosystem of compatible libraries and tools. These features have made it the language officially recommended by Google for the development of Android apps. All this is of great interest to developers and programmers, since it is increasingly common to find companies looking for professionals who know this language, its features and applications.

This Postgraduate Certificate pursues this objective: to enable students to develop and improve their skills so that they can offer a complete and quality profile. This is an opportunity to direct your career in an area that is not only booming (Android dominates by far the field of mobile device users), but whose expansion is still very large.

For this purpose, TECH provides the student with a completely online program, available from the first moment in its entirety, prepared by the best professionals and with rigorously selected and up-to-date information. In addition, the possibility of studying from anywhere and at any time makes this program a perfect opportunity for all those who want to improve their academic career without neglecting their working life.

This **Postgraduate Certificate in Android Application Programming Language: Kotlin** contains the most complete and up-to-date program on the market. Its most notable features are:

- ◆ The development of case studies presented by experts in Computer Science 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 self-assessment can be used to improve learning
- ◆ Its special emphasis on innovative methodologies
- ◆ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ◆ Content that is accessible from any fixed or portable device with an Internet connection



*Differentiate yourself from the rest with a qualification in computer science specialized in a booming sector such as programming for Android devices”*

“

*Mastering Kotlin has become a must for an Android programmer's resume”*

*Go one step further and learn about the broad ecosystem of compatible libraries and tools.*

*A program that will make your learning a practical and dynamic experience thanks to TECH's Relearning methodology.*

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.



# 02 Objectives

Kotlin is one of the most widely used programming languages of the moment in the operating system with the largest number of users in the world. Therefore, the main objective of this Postgraduate Certificate is that the graduate learns to recognize and easily develop programming structures using the technical features offered by Kotlin. In addition, one of the main purposes of TECH is to involve the student in learning through practice, in which they will be able to develop everything learned during the theoretical phase, and even start up their own personal project.





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*Set your own goals within programming and achieve them by acquiring the necessary technical knowledge to do so"*



## General Objectives

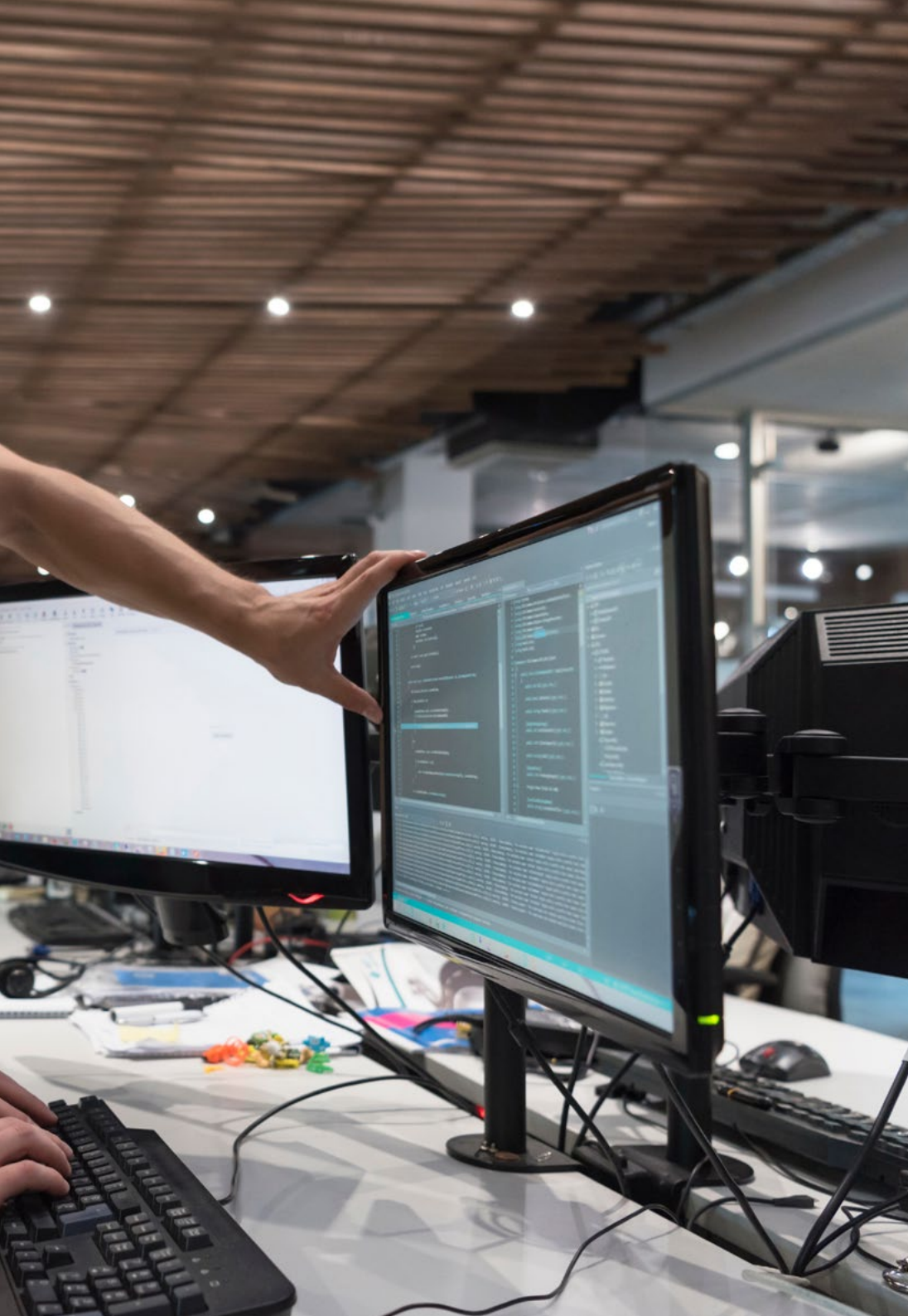
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- ◆ Develop specialized knowledge about the Kotlin programming language and the context of its emergence
- ◆ Specify the basic syntax of the language, its types and variables
- ◆ Analyze the different ways of code flow management
- ◆ Examine Kotlin's inheritance, class and object model
- ◆ Identify the different types of collections
- ◆ Specify the exception management model



*If you're looking to learn the ins and outs and features of the Kotlin language and delve deeper into application programming, TECH is the best choice"*





## Specific Objectives

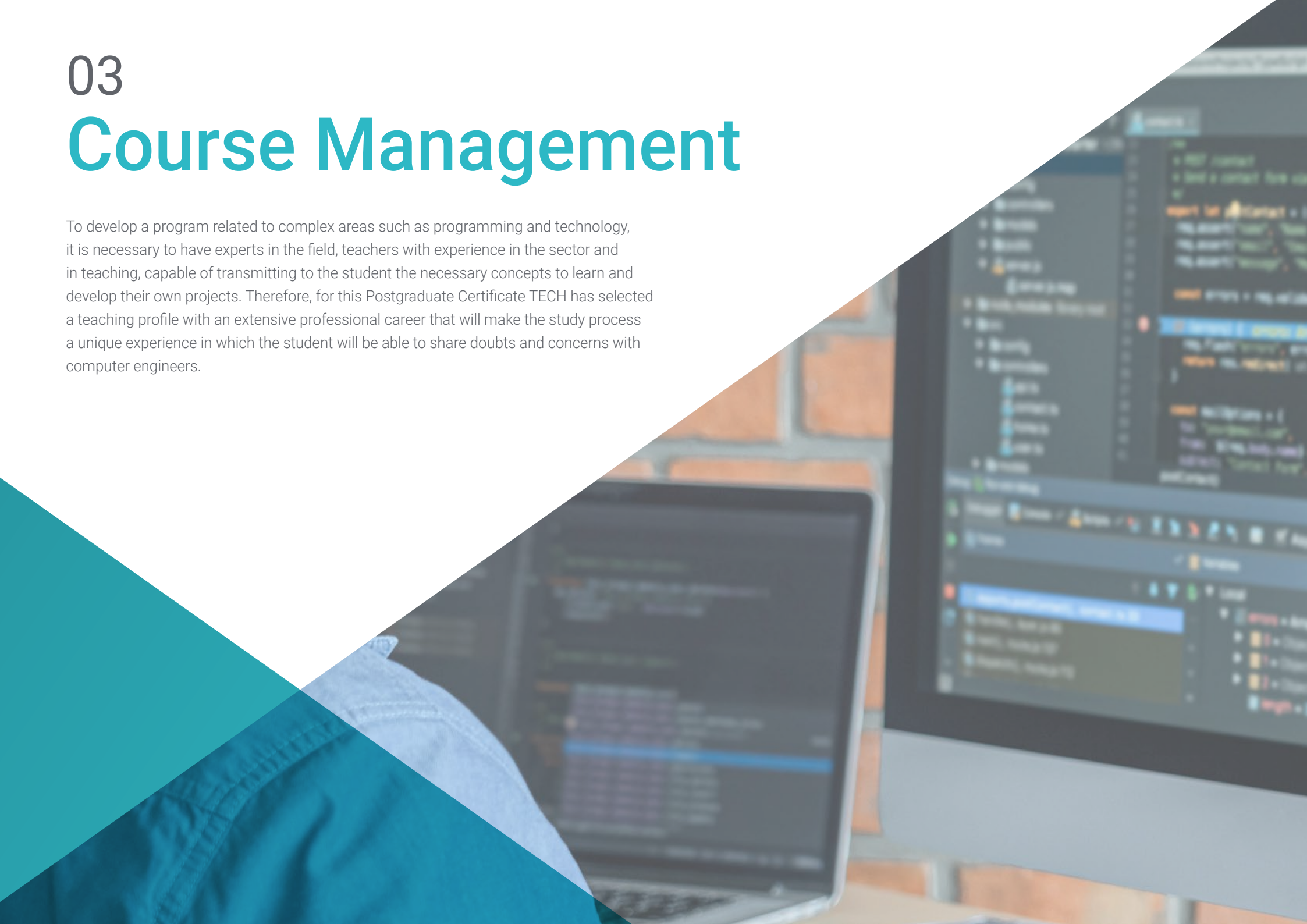
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- ◆ Develop the Kotlin programming language
- ◆ Compile the features and differential capabilities of the Kotlin language
- ◆ Examine the basic execution model of a Kotlin program
- ◆ Analyze the language syntax and program structure of a Kotlin program
- ◆ Specify the model of types and variables in Kotlin
- ◆ Establish the various forms of code flow management in Kotlin
- ◆ Determine the model of classes, collections and objects in Kotlin
- ◆ Generate specialized knowledge about the inheritance model in Kotlin
- ◆ Specify the exception and null type management model in Kotlin

# 03

# Course Management

To develop a program related to complex areas such as programming and technology, it is necessary to have experts in the field, teachers with experience in the sector and in teaching, capable of transmitting to the student the necessary concepts to learn and develop their own projects. Therefore, for this Postgraduate Certificate TECH has selected a teaching profile with an extensive professional career that will make the study process a unique experience in which the student will be able to share doubts and concerns with computer engineers.





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*Reach your goals with the best experts  
in Kotlin language development”*

## 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 is a pioneer in e-learning and Relearning,, a methodology that facilitates the study of content that requires as much attention as computer programming. In addition, there are many possibilities that arise from being able to study this program from anywhere, at any time, with a personalized pace and with a modern, clear and carefully adapted theoretical and practical content for each program. All this allows the student to organize the learning process based on their own time and technique without straying from the path to success that culminates with the completion of this Postgraduate Certificate.





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*You set the time, TECH in return offers you a quality, innovative and complete qualification”*

## Module 1. Programming Language in Android Applications Kotlin

- 1.1. Kotlin Programming Language
  - 1.1.1. Kotlin Programming Language
  - 1.1.2. Kotlin Programming Language. Features
  - 1.1.3. Running a Program in Kotlin
- 1.2. Programming in Kotlin
  - 1.2.1. Structure of a Program in Kotlin
  - 1.2.2. Reserved Words and Syntax
  - 1.2.3. Writing through Console and Read User Inputs– Hello World
- 1.3. Types and Variables in Kotlin
  - 1.3.1. Types and Variables in Kotlin
  - 1.3.2. Variable Declaration: Var vs. Val
  - 1.3.3. Operators
  - 1.3.4. Type Conversion
  - 1.3.5. Arrays
- 1.4. Flow Control in Kotlin
  - 1.4.1. Flow Control
  - 1.4.2. Conditional Expressions
  - 1.4.3. Loops
- 1.5. Functions in Kotlin
  - 1.5.1. Functions in Kotlin
  - 1.5.2. Structure of a Function
  - 1.5.3. Scope Functions
- 1.6. Types and Objects in Kotlin
  - 1.6.1. Types and Objects in Kotlin
  - 1.6.2. Classes
  - 1.6.3. Objects
  - 1.6.4. Constructors and Property Initialization
  - 1.6.5. Nested Classes and Inner Classes
  - 1.6.6. Data Classes





- 1.7. Kotlin Inheritance
  - 1.7.1. Inheritance
  - 1.7.2. Superclasses and Subclasses
  - 1.7.3. Overwriting Properties and Functions
  - 1.7.4. Inheritance vs. Other Types of Relationship between Classes
  - 1.7.5. Sealed Classes
  - 1.7.6. Listed
- 1.8. Abstract Classes and Interfaces in Kotlin
  - 1.8.1. Abstract Classes and Interfaces
  - 1.8.2. Abstract Classes
  - 1.8.3. Interfaces
  - 1.8.4. Validation and Conversion of Operator Types - Is, When, As
- 1.9. Kotlin Collections
  - 1.9.1. Kotlin Collections
  - 1.9.2. List
  - 1.9.3. Set
  - 1.9.4. Map
- 1.10. Exception and Null Value Handling in Kotlin
  - 1.10.1. Exception and Null Value Handling
  - 1.10.2. Null Value, Nullable and Non-Nullable Types
  - 1.10.3. Exceptions



*A comprehensive and innovative program that will allow you to improve your programming skills with Kotlin"*

# 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.



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*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.

“

*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

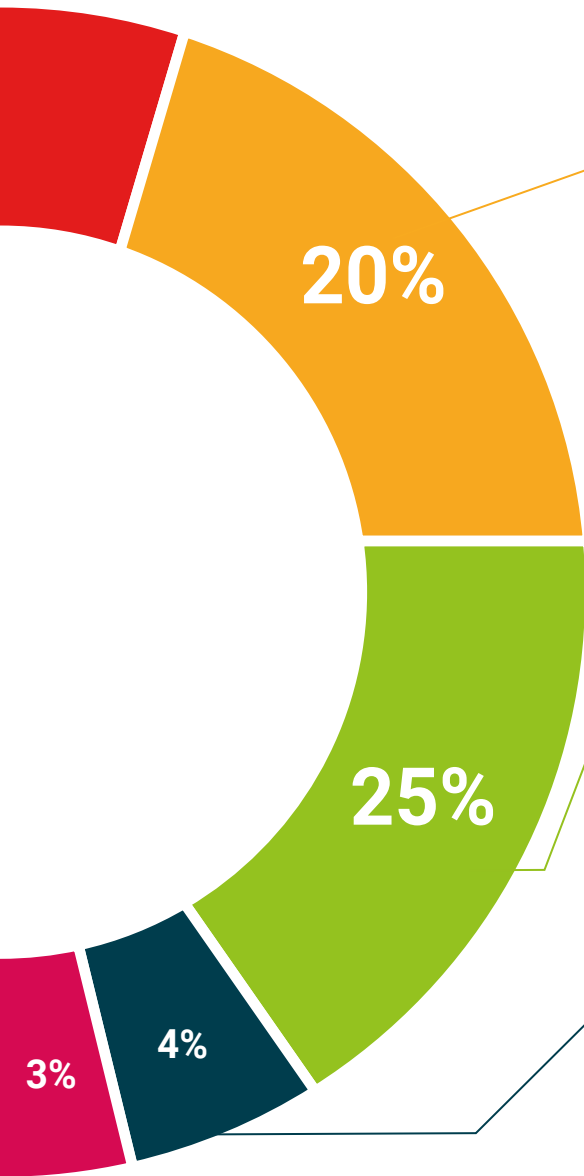
They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



### 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: Kotlin guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.





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

This **Postgraduate Certificate in Programming Languages in Android Applications 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: 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  
online training  
development language  
classroom



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