

# Professional Master's Degree Mobile Application Development





## Professional Master's Degree Mobile Application Development

- » Modality: online
- » Duration: 12 months
- » Certificate: TECH Global University
- » Credits: 60 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/information-technology/professional-master-degree/master-mobile-application-development](http://www.techtute.com/us/information-technology/professional-master-degree/master-mobile-application-development)

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# 01

# Introduction

Cryptocurrencies, metaverse, super apps or tools for creators are the most prominent trends for the coming years in Mobile Application Development according to experts. It is undeniable that these devices have changed the world forever, but their transformative power has not been exhausted, just as the human imagination has not. It is now, more than ever, that the industry presents the imperative need for professionals specialized in Application Development, without diverging between iOS or Android. This is why this program has been designed to provide those interested with all the knowledge to boost their careers with a specialized profile. Completely online and achieving your qualification in 12 months.





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*If you want to specialize as a web developer, Android developer, iOS developer or DevOps developer this Professional Master's Degree is for you”*

Nowadays, life is not understood without a mobile device to stay communicated or connected with the outside world. The sale of devices is growing by 20% every year, totaling an average of 243 million units annually. Most people access the internet through their cell phones and the trend is increasing worldwide with the constant technological advances and the diverse capabilities offered by these devices.

It is estimated that there are more than 7 billion mobile devices in the world and they need different applications to function and be operational. The most common activities include the use of applications: shopping, payments, transactions, transportation, studies. In this fast-moving market, it is necessary to specialize in the analysis techniques of mobile technology projects with the advantages of wireless communications, the different types of mobile devices and the alternatives for the development of applications.

Therefore, security is a topic that cannot be left aside and will be developed in this program, since it is a key element in the design and development of mobile applications. This program shares exclusive and up-to-date content on the technologies that allow protecting data in applications and mobile devices.

This Professional Master's Degree provides specialized knowledge for the correct Mobile Application Development. To do this, it provides the student with the skills to understand the different programming languages for each type of device, delving into Responsive design. This will allow you to develop applications adaptable to the different characteristics of each device.

TECH also provides the best study methodology taught completely online, which eliminates the need to attend a classroom or the typical restrictions of a predetermined schedule. In this way, in 12 months, students will acquire the necessary basis to undertake consulting tasks in all aspects related to mobile technology or to develop their own business based on the development of applications.

This **Professional Master's Degree in Mobile Application Development** contains the most complete and up-to-date program on the market. The most important features include:

- ◆ The development of practical cases presented by experts in Mobile Application Development
- ◆ 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 for experts and individual reflection work
- ◆ Content that is accessible from any fixed or portable device with an Internet connection



*Not only will you be able to master all the content on Mobile Application Development, but you will also understand how to monetize them and all about Mobile Marketing"*

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*In this program, you will understand the different programming languages for each type of mobile device, delving into Responsive design to develop suitable Apps"*

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

Its multimedia content, developed with the latest educational technology, will allow professionals to learn in a contextual and situated learning environment, i.e., a simulated environment that will provide immersive education programmed to prepare in real situations.

The design of this program focuses on Problem-Based Learning, by means of which professionals must try to solve the different professional practice situations that are presented to them throughout the program. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

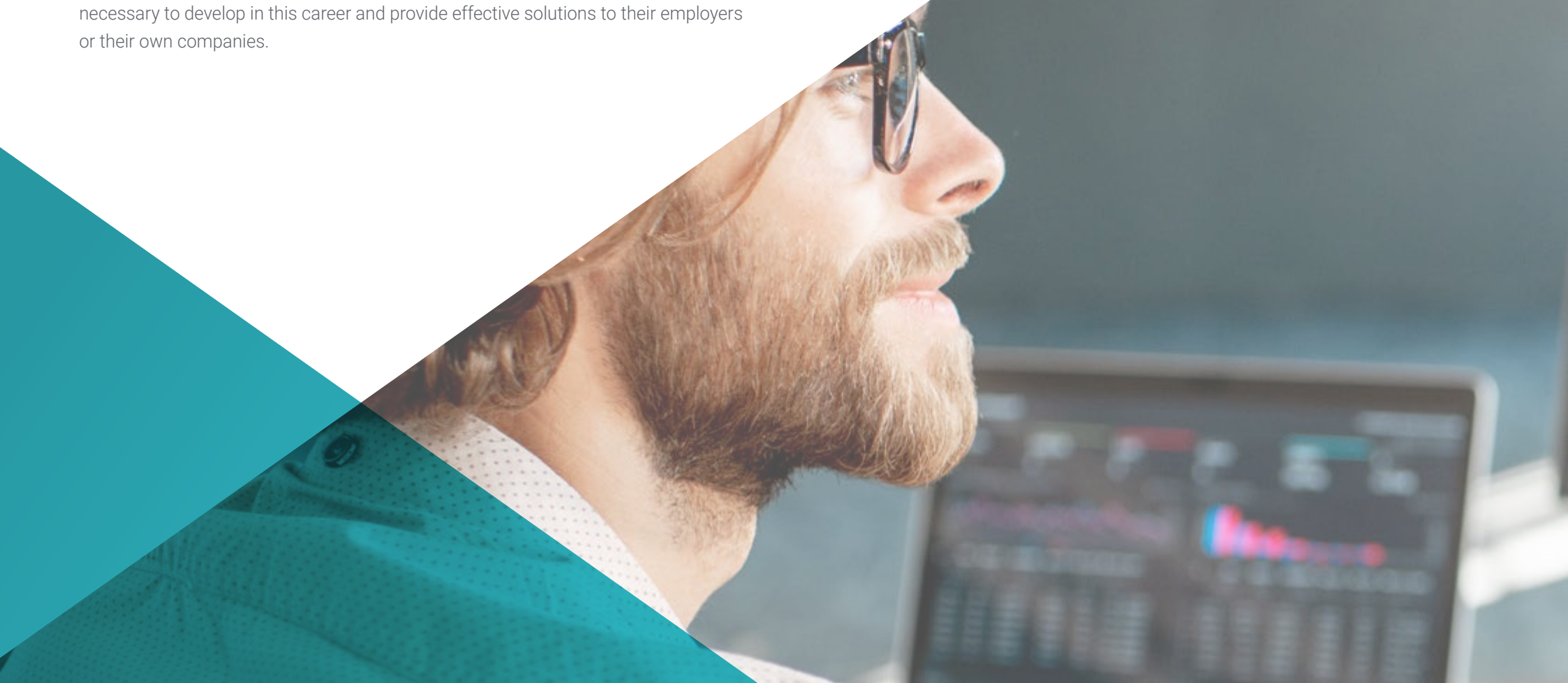
*Set the goal for your professional evolution. Balance your day to day with this 100% online training with the most efficient methodology implemented by TECH Global University.*

*This is your opportunity to learn how to develop mobile applications in an autonomous and professional way, in multiplatform devices.*



# 02 Objectives

The evolving development of applications for mobile devices that facilitate the processes and development of activities within the market and sectors such as IT, web, software, business, marketing, sales, consulting, multiplatform mobile technology and companies require professionals who are up to date on trends and know how to perform in all aspects from design, programming to the end-user experience. This Professional Master's Degree teaches all the tools and fundamentals necessary to develop in this career and provide effective solutions to their employers or their own companies.





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*68% of the world's population already has a cell phone and Apps account for 80% of the time spent using the device. With this Professional Master's Degree, you will be able to create the most efficient apps for mobile devices on the market"*



## General Objectives

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- ◆ Analyze user needs and behavior in relation to mobile devices and their applications
- ◆ Execute the design of architectures, iterations and user interfaces through the programming languages of the most representative mobile platforms on the market (Web, iOS and Android)
- ◆ Apply error control, testing and debugging mechanisms in mobile application development
- ◆ Address different practical and business cases for publishing, distributing and disseminating mobile applications in the main application markets
- ◆ Master the practical knowledge to plan and manage technology projects related to mobile technologies
- ◆ Develop the skills, aptitudes and tools necessary to learn to develop mobile applications in an autonomous and professional manner, on multi-platform devices
- ◆ Explore content related to app monetization and mobile marketing





## Specific Objectives

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### Module 1. Programming Methodologies in Mobile Application Development

- ◆ Explore traditional software development processes
- ◆ Analyze agile development processes
- ◆ Promote development practices
- ◆ Examine the different representation and diagramming techniques
- ◆ Delve into the different design patterns present in the software industry
- ◆ Explore different software testing techniques
- ◆ Recognize the rules and standards of quality reference in development

### Module 2. Technologies in Mobile Application Development

- ◆ Establish concepts for mobile devices
- ◆ Compile the main platforms
- ◆ Examine their common components
- ◆ Identify differentiating components, their capabilities and limitations
- ◆ Define the different scenarios in which they can operate Advantages
- ◆ Analyze the different interactions that these devices can mediate
- ◆ Raise awareness of the different abuses that can be committed

### Module 3. Work Tools for Mobile Application Development

- ◆ Prepare the development environment
- ◆ Acquire command terminal skills
- ◆ Efficient use of the version control system
- ◆ Address the use of remote code versioning systems
- ◆ Establish the key notions of internet operation
- ◆ Develop relevant software programming concepts
- ◆ Examine data structures
- ◆ Review algorithm design and interpretation techniques

### Module 4. Multi-Platform Web Development for Mobiles

- ◆ Determine the advantages and limitations of the native and hybrid App development model
- ◆ Examine the features and limitations of Progressive Web Apps (PWA)
- ◆ Analyze the main Frameworks for web application development: Angular, React, Vue
- ◆ Compile the main technologies for the development of multi-platform mobile applications Ionic and Flutter
- ◆ Analyze capabilities to deploy these hybrid Apps as Web or Desktop Apps on PCs
- ◆ Examine a model to choose the alternative best suited for the development of a specific application

### Module 5. Database for Mobile Application Development

- ◆ Identify the best database model in relation to the characteristics of the mobile application
- ◆ Establish the capabilities of each of the database systems
- ◆ Determine the differences between the different databases
- ◆ Examine how to connect to and load/extract data from different types of databases
- ◆ Analyze the basic capabilities of development environments with database capabilities including

### Module 6. Application Development for Android Systems

- ◆ Develop an application in Kotlin
- ◆ Use Gradle to manage libraries
- ◆ Using Retrofit to connect our application to a RESTful API
- ◆ Specify the basic requirements for the choice of a library
- ◆ Analyze a monetization system
- ◆ Design Responsive Views
- ◆ Publish an application on Play Store

### Module 7. Application Development for iOS Systems

- ◆ Develop an application in Swift
- ◆ Use Cocoa Pods to manage libraries
- ◆ Make use of Alamofire to connect our application with a RESTful API
- ◆ Specify the basic requirements for the choice of a library
- ◆ Develop a monetization system with ADMOB
- ◆ Design views from code
- ◆ Publish an application in the App Store



**Module 8. Continuous Integration Deployments for Mobiles**

- ◆ Determine the worst-case scenario that gives rise to the need for this methodology
- ◆ Specify the requirements that the software must meet to be integrated
- ◆ Establish what is continuous integration, continuous delivery and continuous deployment
- ◆ Analyze DevSecOps
- ◆ Examine continuous monitoring
- ◆ Develop the implementations of the different stages

**Module 9. Mobile User Experience**

- ◆ Analyze the new type of user, their interactions and their journey through mobile applications and websites
- ◆ Determine the fundamental tools for web analytics, mobility and accessibility
- ◆ Specify micro-interaction assessment techniques and the design of customized experiences
- ◆ Establish how new disruptive technologies such as AI or IoT have taken customer experience to new standards
- ◆ Show how behavioral analytics generates a quantity and quality of data never seen in traditional analytics
- ◆ Develop new methodologies such as Design Thinking, focused on the user
- ◆ Propose basic and advanced prototyping and Wireframing tools

**Module 10. Security on Mobile Devices**

- ◆ Determine the security features and levels of security on a mobile device
- ◆ Establish the techniques to be used to secure a device
- ◆ Analyze the common errors in security
- ◆ Examine the mechanisms enabled in programming to avoid security breaches
- ◆ Specify the recommendations given by the security agencies
- ◆ Compile the different solutions available on the market for managing the security of mobile devices within the enterprise
- ◆ Analyze the cryptographic processes applied to mobile security



*Enroll now in this Professional Master's Degree, and graduate 100% online in 12 months"*

# 03 Skills

The growing demand for outstanding professionals in the technology industry implies constant specialization to perform in a rapidly evolving market. The Professional Master's Degree in Mobile Application Development develops the necessary skills at all points of the software development life cycle. Empowers students with specialized knowledge about the different technology components of mobiles. Provide knowledge of hardware and software essential for any professional dedicated to this sector, or who wants to expand their area of expertise in consulting, in aspects related to multiplatform mobile technology, or to dimension their own business from the development of applications.



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*With this qualification, you will gain the practical knowledge to plan and manage projects with mobile technologies. And you will be able to provide effective solutions to your employers or company"*



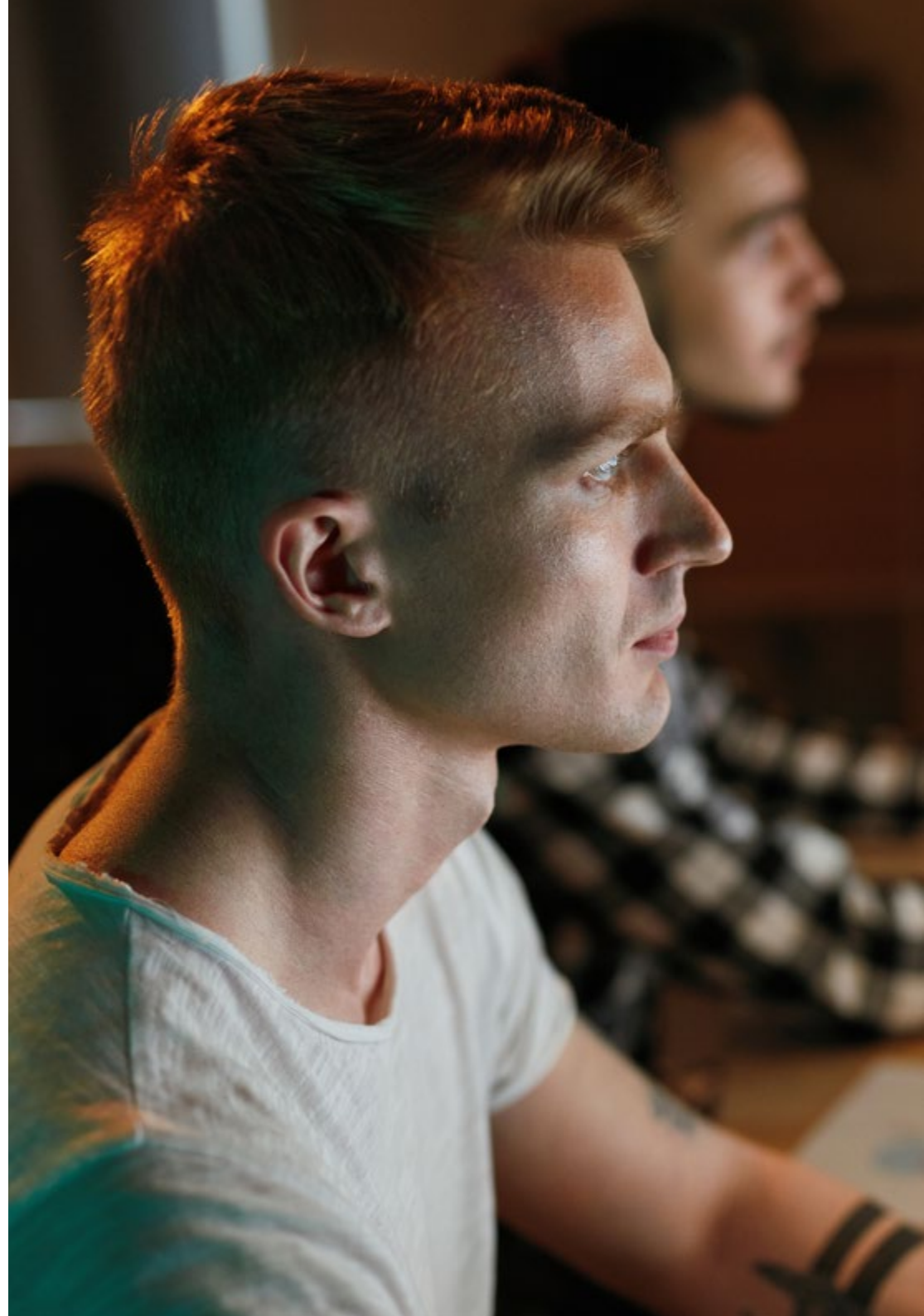
## General Skills

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- ◆ Develop mobile applications for both Android and iOS mobile devices
- ◆ Enhance the necessary skills at all points of the software development life cycle
- ◆ Analyze the different programming methodologies for different devices and use cases
- ◆ Master specialized knowledge of the different technology components of mobile devices
- ◆ Understand the working environments for different mobile application programming languages and styles
- ◆ Efficient realization of applications from a user experience point of view to make it truly functional and appealing



*Bringing all these skills together will make you stand out in the competitive working world of the future"*







## Specific Skills

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- ◆ Analyze software development processes from the traditional and agile point of view
- ◆ Develop general considerations for mobile devices
- ◆ Master the key concepts of programming and the internet, the web and how it works
- ◆ Compare the native development model and the cross-platform web development model based on hybrid Apps
- ◆ Determine how to use databases in mobile applications
- ◆ Publish an application on Play Store
- ◆ Determining the different stages of a continuous integration cycle
- ◆ Understand the principles of user-centric culture and how it creates a new position for customer experience professionals
- ◆ Address security issues on mobile devices

# 04

# Course Management

This Professional Master's Degree in Mobile Application Development is led by teachers with extensive knowledge and experience in new technologies, solution architecture and digital infrastructure, experts in Android programming and application developers. Their extensive curriculums offer a guarantee of quality of the content selected for this program, betting on the optimization of the learning process of professionals who seek in this space the contribution they need for their professional success.



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*Professional experts in the development of applications and the technological area will accompany you throughout the study process, providing you with the best content"*

## Management



### Mr. Olalla Bonal, Martín

- ♦ Senior Blockchain Practice Manager at EY
- ♦ Blockchain Client Technical Specialist for IBM
- ♦ Director of Architecture for Blocknitive
- ♦ Non-Relational Distributed Databases Team Coordinator for wedoIT (IBM Subsidiary)
- ♦ Infrastructure Architect at Bankia
- ♦ Head of Layout Department at T-Systems
- ♦ Department Coordinator for Bing Data España SL

## Professors

### Mr. Frias Favero, Pedro Luis

- ♦ Lead Blockchain Architect at EY
- ♦ Co-founder and Technical Director of Swear IT Technologies
- ♦ IT Support Director in Mexico, Colombia and Spain for Key Business One
- ♦ Degree in Industrial Engineering from Yacambú University
- ♦ Expert in Blockchain and Decentralized Applications from the University of Alcalá de Henares

### Mr. Noguera Rodríguez, Pablo

- ♦ Software engineer applied to Blockchain solutions at EY
- ♦ Mobile app developer at Bitnovo
- ♦ Developer of native iOS apps at Umani and Stef
- ♦ Freelance Programmer creator of Aviaze App, in collaboration with Starman Aviation

### Ms. Ochoa Mancipe, Joanna Dulima

- ♦ Senior Development Analyst at Q-Vision Technologies
- ♦ Quality Engineer at Samtel
- ♦ Java Developer at Complemento 360
- ♦ Development Engineer at RUNT
- ♦ Support, Testing and Process and Information Modeling Engineer at the National University of Colombia
- ♦ Development Engineer at Union Solutions Information Systems
- ♦ Researcher of the Information Systems and ICT for Organizations Research Group of the National University of Colombia
- ♦ Degree in Systems and Computer Engineering from the National University of Colombia
- ♦ Master's Degree in Information Engineering, Los Andes University





### Mr. Gómez Rodríguez, Antonio

- ◆ Principal Cloud Solutions Engineer for Oracle
- ◆ Co-organizer of Málaga Developer Meetup
- ◆ Specialist Consultant for Sopra Group and Everis
- ◆ Team Leader at System Dynamics
- ◆ Software Developer at SGO Software
- ◆ Master's Degree in E-Business from La Salle Business School
- ◆ Postgraduate Degree in Information Technologies and Systems, Catalan Institute of Technology
- ◆ Degree in Telecommunications Engineering from the Polytechnic University of Catalonia

### Mr. Gozalo Fernández, Juan Luis

- ◆ Blockchain-based Product Manager for Open Canarias
- ◆ Blockchain DevOps Director at Alastria
- ◆ Director of Service Level Technology at Santander Spain
- ◆ Tinkerlink Mobile Application Development Manager at Cronos Telecom
- ◆ IT Service Management Technology Director at Barclays Bank Spain
- ◆ Bachelor's Degree in Computer Engineering from UNED
- ◆ Deep Learning Specialization in DeepLearning.ai

**Mr. Villot Guisán, Pablo**

- ◆ Chief Information Officer, Chief Technical Officer and Founder of New Tech & Talent
- ◆ Technology Expert at KPMG Spain
- ◆ Blockchain Architect at Everis
- ◆ J2EE Developer Commercial Logistics Area in Inditex
- ◆ Degree in Computer Engineering from the University of La Coruña
- ◆ Microsoft MSCA certification: Cloud Platform

**Mr. Guerrero Díaz-Pintado, Arturo**

- ◆ Director of Customer Experience for IBM
- ◆ Technical Pre-Sales Engineer through Watson Customer Engagement portfolio
- ◆ R&D Network Engineer at Telefónica
- ◆ Degree in Telecommunications Engineering from the University of Alcalá and the Danish Technical University

**Mr. Pérez Rico, Javier**

- ◆ Android Technical Lead at Nologis
- ◆ Android Technical Lead at Seekle
- ◆ Android programmer at Gowex-Ideup
- ◆ Junior Android Programmer at Tecnocom
- ◆ Master's Degree in Research and Computer Science, Complutense University of Madrid







#### **Mr. Marina Gonzalo Alberto**

- ◆ Mobility Department Manager at VectorITC/Softte
- ◆ Teacher at Vector Academy
- ◆ Mobile Applications Developer at Leroy Merlin
- ◆ Senior Technician in Multiplatform Applications Development at IES Mirasierra
- ◆ Analyst Programmer
- ◆ Java Programmer and Application Development at Infored Foundation

#### **Dr. Ceballos van Grieken, Ángel**

- ◆ Researcher specialized in the application of ICT in education
- ◆ Author of the Project for the Creation of Educational Contents for Mobile Devices
- ◆ Teacher in postgraduate studies related to ICT
- ◆ Teacher in university studies related to Computer Science
- ◆ Doctor in Education from Los Andes University
- ◆ Specialist in Educational Informatics, Simón Bolívar University

#### **Mr. Rodríguez Fuentes, Alberto**

- ◆ Process and System Engineer at NTTData
- ◆ Process and System Engineering Technician at NTTData
- ◆ Master's Degree in Cybersecurity and Information Security
- ◆ Graduate in Computer Engineering
- ◆ CCNA Security Certification

# 05

# Structure and Content

TECH has a team of highly qualified professionals with the necessary experience to share real cases on the Mobile Application Development, leading to a deeper and more efficient learning. Professionals in programming, application development and new technologies who have selected exclusive content and who will accompany the professionals in the study process during the 10 modules to be developed in 12 months. From a 100% online platform, with interactive content, distributed in videos, graphics, examples based on problems, audiovisual material and with a large community to discuss the issues raised.







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*Audiovisual content with practical exercises and interactive formats will determine an agile and efficient learning process"*

## Module 1. Programming Methodologies in Mobile Application Development

- 1.1. Software Development Processes
  - 1.1.1. Waterfall
  - 1.1.2. Spiral
  - 1.1.3. RUP
  - 1.1.4. V-Model
- 1.2. Agile Software Development Processes
  - 1.2.1. Scrum
  - 1.2.2. XP
  - 1.2.3. Kanban
- 1.3. Unified Modeling Language (UML)
  - 1.3.1. UML
  - 1.3.2. Types of Modeling
  - 1.3.3. Basic Blocks of UML
- 1.4. UML Behavioral Diagrams
  - 1.4.1. Activity Diagram
  - 1.4.2. Use Case Diagram
  - 1.4.3. Interaction Overview Diagram
  - 1.4.4. Timing Diagram
  - 1.4.5. State Machine Diagram
  - 1.4.6. Communication Diagram
  - 1.4.7. Sequence Diagram
- 1.5. UML Structural Diagrams
  - 1.5.1. Class Diagram
  - 1.5.2. Object Diagram
  - 1.5.3. Component Diagram
  - 1.5.4. Composite Structure Diagram
  - 1.5.5. Deployment Diagram
- 1.6. Creative Design Patterns
  - 1.6.1. Singleton
  - 1.6.2. Prototype
  - 1.6.3. Builder
  - 1.6.4. Factory
  - 1.6.5. Abstract Factory
- 1.7. Structural Design Patterns
  - 1.7.1. Decorator
  - 1.7.2. Facade
  - 1.7.3. Adapter
  - 1.7.4. Bridge
  - 1.7.5. Composite
  - 1.7.6. Flyweight
  - 1.7.7. Proxy
- 1.8. Behavioral Patterns
  - 1.8.1. Chain of Responsibility
  - 1.8.2. Command
  - 1.8.3. Iterator
  - 1.8.4. Mediator
  - 1.8.5. Memento
  - 1.8.6. Observer
  - 1.8.7. State
  - 1.8.8. Strategy
  - 1.8.9. Template Method
  - 1.8.10. Visitor
- 1.9. Testing
  - 1.9.1. Unit Tests
  - 1.9.2. Integration Tests
  - 1.9.3. White Box Techniques
  - 1.9.4. Black Box Techniques
- 1.10. Quality
  - 1.10.1. ISO
  - 1.10.2. ITIL
  - 1.10.3. COBIT
  - 1.10.4. PMP

## Module 2. Technologies in Mobile Application Development

- 2.1. Mobile Devices
  - 2.1.1. Mobile Devices
  - 2.1.2. Infrastructure of a Mobile Device
  - 2.1.3. Hardware Manufacturers
  - 2.1.4. Software Developers
  - 2.1.5. Service Providers
  - 2.1.6. Platform Providers
  - 2.1.7. Main Platforms
- 2.2. Physical Components of Mobile Devices
  - 2.2.1. Storage
    - 2.2.1.1. Immutable
    - 2.2.1.2. Mutable
    - 2.2.1.3. Temporal
    - 2.2.1.4. External
  - 2.2.2. Presenters
    - 2.2.2.1. Displays, Loudspeakers, Haptic Responses
  - 2.2.3. Input Methods
    - 2.2.3.1. Buttons/Keypads
    - 2.2.3.2. Screens
    - 2.2.3.3. Microphones
    - 2.2.3.4. Movement Sensors
  - 2.2.4. Energy Sources
    - 2.2.4.1. Sources of Energy
    - 2.2.4.2. Adaptive Use of Resources
    - 2.2.4.3. Efficient Programming
    - 2.2.4.4. Sustainable Development
- 2.3. Processors
  - 2.3.1. Central Processor
  - 2.3.2. Other Abstracted Processors
  - 2.3.3. Artificial Intelligence Processors
- 2.4. Information Transmitters
  - 2.4.1. Long Range
  - 2.4.2. Mid Range
  - 2.4.3. Short Range
  - 2.4.4. Ultra-Short Range
- 2.5. Sensors
  - 2.5.1. Internal to the Device
  - 2.5.2. Environmental
  - 2.5.3. Medical
- 2.6. Logic Components
  - 2.6.1. Immutable
  - 2.6.2. Manufacturer Mutable
  - 2.6.3. Available to the User
- 2.7. Categorization
  - 2.7.1. Laptops
  - 2.7.2. Smartphones
    - 2.7.2.1. Tablets
    - 2.7.2.2. Multimedia Devices
    - 2.7.2.3. Intelligent Complements
  - 2.7.3. Robotic Assistants
- 2.8. Modes of Operation
  - 2.8.1. Disconnected
  - 2.8.2. Connected
  - 2.8.3. Always Available
  - 2.8.4. Point to Point
- 2.9. Interactions
  - 2.9.1. User-Mediated Interactions
  - 2.9.2. Supplier-Mediated Interactions
  - 2.9.3. Devices-Mediated Interactions
  - 2.9.4. Environmentally Mediated Interactions
- 2.10. Security/Safety
  - 2.10.1. Measures Implemented by the Manufacturer
  - 2.10.2. Measures Implemented by Suppliers
  - 2.10.3. User-Applied Security
  - 2.10.4. Privacy

### Module 3. Work Tools for Mobile Application Development

- 3.1. Environment and Tools for Mobile Application Development
  - 3.1.1. Preparation of the Environment for Mac OS
  - 3.1.2. Preparation of the Environment for Linux
  - 3.1.3. Preparation of the Environment for Windows
- 3.2. Command Line
  - 3.2.1. Command Line
  - 3.2.2. Emulators
  - 3.2.3. Command Interpreter
  - 3.2.4. Folder Creation
  - 3.2.5. File Creation
  - 3.2.6. Navigation
  - 3.2.7. Managing Files and Folders Using the Command Line Interface
  - 3.2.8. Licences
  - 3.2.9. SSH
  - 3.2.10. Command List
- 3.3. Software Repository. Git
  - 3.3.1. Version Control System
  - 3.3.2. Git
  - 3.3.3. Settings
  - 3.3.4. Repository
  - 3.3.5. Branches
  - 3.3.6. Branch Management
  - 3.3.7. Workflows
  - 3.3.8. Merge
  - 3.3.9. Commands
- 3.4. Web Service Version Control
  - 3.4.1. Remote Repositories
  - 3.4.2. Settings
  - 3.4.3. Authentication
  - 3.4.4. Branching of Software Fork
  - 3.4.5. Git Clone Command
  - 3.4.6. Repositories
  - 3.4.7. Github Pages





- 3.5. Advanced Development Tools for Mobile Applications
  - 3.5.1. Postman
  - 3.5.2. Visual Studio Code
  - 3.5.3. GUI for Databases
  - 3.5.4. Hosting
  - 3.5.5. Complementary Development Tools
- 3.6. Web from the Prism of Mobile Application Development
  - 3.6.1. Protocols
  - 3.6.2. Internet Service Provider
  - 3.6.3. IP Addresses
  - 3.6.4. DNS Name Services
- 3.7. Programming in the Mobile Application Development
  - 3.7.1. Programming in the Mobile Application Development
  - 3.7.2. Programming Paradigms
  - 3.7.3. Programming Languages
- 3.8. Application Development Components for Mobiles
  - 3.8.1. Variables and Constants
  - 3.8.2. Types
  - 3.8.3. Operators
  - 3.8.4. Declarations
  - 3.8.5. Loops
  - 3.8.6. Functions and Objects
- 3.9. Data Structure
  - 3.9.1. Data Structure
  - 3.9.2. Linear Structure Types
  - 3.9.3. Functional Structure Types
  - 3.9.4. Tree Structure Types
- 3.10. Algorithms
  - 3.10.1. Algorithms in Programming. Divide and Conquer
  - 3.10.2. Voracious Algorithms
  - 3.10.3. Dynamic Programming

## Module 4. Multi-Platform Web Development for Mobiles

- 4.1. Multi-Platform Web Development
  - 4.1.1. Multi-Platform Web Development
  - 4.1.2. Hybrid vs. Native Apps
  - 4.1.3. Technologies to Create Hybrid Apps
- 4.2. Progressive Web Apps (PWA)
  - 4.2.1. Progressive Web Apps (PWA)
  - 4.2.2. Progressive Web Apps (PWA). Features
  - 4.2.3. Progressive Web Apps (PWA). Construction
  - 4.2.4. Progressive Web Apps (PWA). Limitations
- 4.3. Framework Ionic
  - 4.3.1. Framework Ionic Analysis
  - 4.3.2. Framework Ionic Features
  - 4.3.3. Building an App with Ionic
- 4.4. Web Development Frameworks
  - 4.4.1. Framework Analysis in Web Development
  - 4.4.2. Web Development Frameworks
  - 4.4.3. Web Frameworks Comparison
- 4.5. Angular Framework
  - 4.5.1. Angular Framework
  - 4.5.2. Using Angular in Multi-Platform Application Development
  - 4.5.3. Angular + Ionic
  - 4.5.4. Building Apps in Angular
- 4.6. React Development Library
  - 4.6.1. JavaScript React Library
  - 4.6.2. JavaScript React Library Use
  - 4.6.3. React Native
  - 4.6.4. React + Ionic
  - 4.6.5. Building Apps in React

- 4.7. Vue Development Framework
  - 4.7.1. Vue Development Framework
  - 4.7.2. Vue Development Framework. Use
  - 4.7.3. Vue + Ionic
  - 4.7.4. Building Apps in Vue
- 4.8. Electron Development Frameworks
  - 4.8.1. Electron Development Frameworks
  - 4.8.2. Electron Development Frameworks. Use
  - 4.8.3. Deploying Our Apps Also on Desktop
- 4.9. Flutter Mobile Device Development Tool
  - 4.9.1. Flutter Mobile Device Development Tool
  - 4.9.2. Use of Flutter SDK
  - 4.9.3. Building Apps in Flutter
- 4.10. Development Tools for Mobile Devices. Comparison
  - 4.10.1. Tools for Mobile Application Development
  - 4.10.2. Flutter vs. Ionic
  - 4.10.3. Selection of the Most Suitable Stack for Creating an App

## Module 5. Database for Mobile Application Development

- 5.1. Databases in Mobile Devices
  - 5.1.1. Data Persistence in Mobile Application Development
  - 5.1.2. Database Capabilities for Mobile Apps
  - 5.1.3. SQL Structured Query Language
- 5.2. Choice of Database for Mobile Applications
  - 5.2.1. Database-Driven Analysis of Applications in Mobile Devices
  - 5.2.2. Database Categories
  - 5.2.3. Database Overview
- 5.3. Development with SQLite
  - 5.3.1. SQLite Database
  - 5.3.2. Deployment of the Model
  - 5.3.3. Connection to SQLite

- 5.4. Development with Oracle Berkeley DB
  - 5.4.1. Berkeley DB Database
  - 5.4.2. Model Deployment
  - 5.4.3. Connection to Berkeley DB
- 5.5. Development with Realm
  - 5.5.1. Realm Capabilities
  - 5.5.2. Database Creation in Realm
  - 5.5.3. Connection to Realm
- 5.6. Development with CouchDB Lite
  - 5.6.1. CouchDB Lite Database
  - 5.6.2. Database Creation with CouchDB Lite
  - 5.6.3. Connection with CouchDB Lite
- 5.7. Development with MySQL Centralized Database
  - 5.7.1. MySQL Database
  - 5.7.2. Deployment of Relational Model with MySQL
  - 5.7.3. Connection to MySQL
- 5.8. Centralized Developments Oracle, MS SQL Server, MongoDB
  - 5.8.1. Development with Oracle
  - 5.8.2. Development with MS SQL Server
  - 5.8.3. Development with MongoDB
- 5.9. Graph Type Data
  - 5.9.1. Graph Oriented Database
  - 5.9.2. Database Creation with Neo4j
  - 5.9.3. Connection to Neo4j from the Mobile App
- 5.10. Environments with Storage Capacities
  - 5.10.1. Firebase Developments
  - 5.10.2. Core Data Developments
  - 5.10.3. Visual Builder Cloud Service Development

## Module 6. Application Development for Android Systems

- 6.1. Android Studio
  - 6.1.1. Creation of a Project
  - 6.1.2. Configuration of an Emulator for Compiling
  - 6.1.3. Configuration of a Physical Phone for Compiling
- 6.2. Kotlin Programming Language
  - 6.2.1. Kotlin I: Kotlin Programming Language
  - 6.2.2. Kotlin II: Functions and Loops
  - 6.2.3. Kotlin III: Lambdas and Interfaces
- 6.3. Libraries and Gradle
  - 6.3.1. Gradle Programming Library
  - 6.3.2. Library Implementation
  - 6.3.3. Build Flavors
- 6.4. Android Mobile Device Oriented Development Libraries
  - 6.4.1. Retrofit
  - 6.4.2. Picasso
  - 6.4.3. Material Design Libraries
- 6.5. Screen Design
  - 6.5.1. XML: Android Design
  - 6.5.2. Responsive and Constraint Layout
  - 6.5.3. Styles and Defaults
  - 6.5.4. Strings Location
- 6.6. Activity, Fragment. Life Cycles
  - 6.6.1. Activity
  - 6.6.2. Fragment
  - 6.6.3. Transactions, Fragment Manager
- 6.7. Services in the Foreground, Location and Sensors
  - 6.7.1. Access to Sensors
  - 6.7.2. Access to Foreground Localization
  - 6.7.3. Background Location Access
  - 6.7.4. Foreground Service for Accessing Location in the Background

- 6.8. Programming Architectures Oriented to Application Development on Android Mobiles
  - 6.8.1. MVC
  - 6.8.2. MVVM
  - 6.8.3. MCV vs. MVVM
- 6.9. Monetization and Analytics
  - 6.9.1. Firebase Analytics
  - 6.9.2. Firebase Crashlytics
  - 6.9.3. Monetization and Advertising
- 6.10. Play Store and Versioning
  - 6.10.1. Configuration of a Play Store Account
  - 6.10.2. Preparing Test Versions and Beta Accounts
  - 6.10.3. Launch into Production

## Module 7. Application Development for iOS Systems

- 7.1. Xcode Development Environment
  - 7.1.1. Creation of a Project
  - 7.1.2. Configuration of an Emulator for Compiling
  - 7.1.3. Configuration of a Physical Phone for Compiling
- 7.2. Swift Programming Language
  - 7.2.1. Swift I: Programming Language
  - 7.2.2. Swift II: Functions and Loops
  - 7.2.3. Swift III: Lambdas and Structs
- 7.3. Libraries and Cocoa Pods
  - 7.3.1. Pods: Installation
  - 7.3.2. Configuration of Cocoa Pods
  - 7.3.3. Structure of Cocoa Pods
- 7.4. Libraries: Api, Database and R.swift
  - 7.4.1. Alamofire
  - 7.4.2. SQL Databases with GRDB
  - 7.4.3. R.swift
- 7.5. Screen Design
  - 7.5.1. Design with Storyboard
  - 7.5.2. Responsive Design
  - 7.5.3. View Design by Code and SwiftUI





- 7.6. View Setup
  - 7.6.1. UIViewController and Its Lifecycle
  - 7.6.2. Interaction between Different Screens
  - 7.6.3. Types of Transitions and Modes
- 7.7. Sensors and Localization
  - 7.7.1. Access to Sensors
  - 7.7.2. Access to Foreground Localization
  - 7.7.3. Background Location Access
- 7.8. Architecture
  - 7.8.1. MVP
  - 7.8.2. VIPER
  - 7.8.3. iOS Development Architecture
- 7.9. Monetization and Analytics
  - 7.9.1. Firebase Analytics
  - 7.9.2. Firebase Crashlytics
  - 7.9.3. Monetization and Ads with Google ADMob
- 7.10. App Store and Versioning
  - 7.10.1. Configuration of an App Store Account
  - 7.10.2. Test Flight Versions
  - 7.10.3. Launch into Production

## Module 8. Continuous Integration Deployments for Mobiles

- 8.1. Software Life Cycle
  - 8.1.1. Software Life Cycle
  - 8.1.2. Agile Methodologies
  - 8.1.3. The Continuous Agile Software Cycle
- 8.2. Manual Product Development
  - 8.2.1. Manual Integration
  - 8.2.2. Manual Delivery
  - 8.2.3. Manual Deployment
- 8.3. Supervised Integration
  - 8.3.1. Continuous Integration
  - 8.3.2. Supervised Integration. Manual Revision
  - 8.3.3. Static Automatic Revisions

- 8.4. Logical Tests
  - 8.4.1. Unit Tests
  - 8.4.2. Integration Tests
  - 8.4.3. Behavior Tests
- 8.5. Continuous Integration
  - 8.5.1. Continuous Integration Cycle
  - 8.5.2. Dependencies between Integrations
  - 8.5.3. Continuous Integration as a Repository Management Methodology
- 8.6. Continuous Delivery
  - 8.6.1. Continuous Delivery
  - 8.6.2. Continuous Delivery Solutions
  - 8.6.3. Continuous Delivery. Advantages
- 8.7. Continuous Deployment
  - 8.7.1. Continuous Deployment
  - 8.7.2. Continuous Deployment Solutions
  - 8.7.3. Continuous Deployment. Typology
- 8.8. DevSecOps
  - 8.8.1. DevSecOps Use
  - 8.8.2. Static Analyzers
  - 8.8.3. Dynamic Analysis Safety Tests
- 8.9. Continuous Monitoring
  - 8.9.1. Continuous Monitoring
  - 8.9.2. Continuous Monitoring. Analysis and Advantages
  - 8.9.3. Continuous Monitoring. Platforms
- 8.10. Implementation
  - 8.10.1. Local Machine Implementation
  - 8.10.2. Shared Machine Implementation
  - 8.10.3. Cloud-Based Implementation
  - 8.10.4. Configuration Management

## Module 9. Mobile User Experience

- 9.1. User Experience
  - 9.1.1. Client Experience
  - 9.1.2. Client Experience. Requirements
  - 9.1.3. Bidirectionality with the Client
- 9.2. Client Experience. Objectives and Equipment
  - 9.2.1. Client Experience. Objectives and Equipment
  - 9.2.2. Iterative Processes
  - 9.2.3. Information Required
- 9.3. Micro-Interactions
  - 9.3.1. End-to-End Relationship
  - 9.3.2. Interactions
  - 9.3.3. Omnichannel
- 9.4. User Behavior
  - 9.4.1. Foundation Design
  - 9.4.2. Web and Session Analytics
  - 9.4.3. Analytics Experts
- 9.5. State of the Art Technology
  - 9.5.1. Machine Learning
  - 9.5.2. Blockchain
  - 9.5.3. Internet of Things
- 9.6. Technical Components
  - 9.6.1. Technical Components
  - 9.6.2. Advanced Components: Devices
  - 9.6.3. Advanced Components: Different Profiles
- 9.7. Usability
  - 9.7.1. Nielsen Heuristics
  - 9.7.2. User Tests
  - 9.7.3. Useability Errors

- 9.8. UX Techniques User Experience
  - 9.8.1. Rules
  - 9.8.2. Prototyping
  - 9.8.3. Low-Code Tools
- 9.9. Visual Strategy
  - 9.9.1. User Interface Designer
  - 9.9.2. User Interface Work on the Web
  - 9.9.3. User Interface Work in Applications
- 9.10. Developer Frameworks
  - 9.10.1. CX Frameworks
  - 9.10.2. UX Frameworks
  - 9.10.3. UI Frameworks

## Module 10. Security on Mobile Devices

- 10.1. Mobile Device Security Architecture
  - 10.1.1. Physical Security of Devices
  - 10.1.2. Operating System Security
  - 10.1.3. Application Security
  - 10.1.4. Data Security
  - 10.1.5. Communications Security
  - 10.1.6. Security of Enterprise Devices
- 10.2. Securing Mobile Hardware
  - 10.2.1. Mobile Devices
  - 10.2.2. Wearable Devices
  - 10.2.3. Automotive
  - 10.2.4. IoT Devices
  - 10.2.5. TV Devices

- 10.3. Operating System Security
  - 10.3.1. Android Mobile Devices
  - 10.3.2. Apple IOS Mobile Devices
  - 10.3.3. Other Existing Mobile Devices: Blackberry, etc
  - 10.3.4. Wearable Devices
  - 10.3.5. Automotive Operating Systems
  - 10.3.6. Mobile Devices in the Internet of Things (IoT)
  - 10.3.7. SmartTV Devices
- 10.4. Securing Mobile Applications
  - 10.4.1. Android Mobile Devices
  - 10.4.2. Apple IOS Mobile Devices
  - 10.4.3. Other Mobile Devices Blackberry
  - 10.4.4. Wearables Devices
  - 10.4.5. Automotive Operating Systems
  - 10.4.6. Mobile Devices in the Internet of Things (IoT)
  - 10.4.7. SmartTV Devices
- 10.5. Securing Data in Mobile Applications
  - 10.5.1. Android Mobile Devices
  - 10.5.2. Apple IOS Mobile Devices
  - 10.5.3. Other Mobile Devices Blackberry
  - 10.5.4. Wearable Devices
  - 10.5.5. Automotive Operating Systems
  - 10.5.6. Mobile Devices in the Internet of Things (IoT)
  - 10.5.7. SmartTV Devices
- 10.6. Mobile Market Places Security
  - 10.6.1. Google Play by Google
  - 10.6.2. Play Store by Apple
  - 10.6.3. Other Market Places
  - 10.6.4. Mobile Rooting
- 10.7. Multi-Platform Security Solutions
  - 10.7.1. Mobile Device Management (MDM)
  - 10.7.2. Types of Solutions on the Market
  - 10.7.3. Securing Devices Using MDM (Master Data Management)
- 10.8. Secure Mobile Application Development
  - 10.8.1. Use of Patterns for Safe Development
  - 10.8.2. Integrated Security Test Management
  - 10.8.3. Secure Application Deployment
- 10.9. Permission Management in Mobile Devices
  - 10.9.1. Permission Systems
  - 10.9.2. Digital Signatures in the Android Application Package (APK)
  - 10.9.3. Execution of Processes in the Core
  - 10.9.4. Execution Threads and Events
- 10.10. Security Recommendations for Mobile Devices
  - 10.10.1. NSA Recommendations on Mobile Devices
  - 10.10.2. INCIBE Recommendations on Mobile Devices
  - 10.10.3. ISO 27001:2013 Annex
    - 10.10.3.1. Mobile Device Use Policies



*Now begins the road to a better future.  
Enhance the knowledge that will lead you  
to achieve your professional goals with  
this Professional Master's Degree"*

06

# 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.





“

*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.



# 07 Certificate

The Professional Master's Degree in Mobile Application Development guarantees students, in addition to the most rigorous and up-to-date education, access to a Professional Master's Degree issued by TECH Global University.





“

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

This program will allow you to obtain your **Professional Master's Degree diploma in Mobile Application Development** endorsed by **TECH Global University**, the world's largest online university.

**TECH Global University** is an official European University publicly recognized by the Government of Andorra ([official bulletin](#)). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

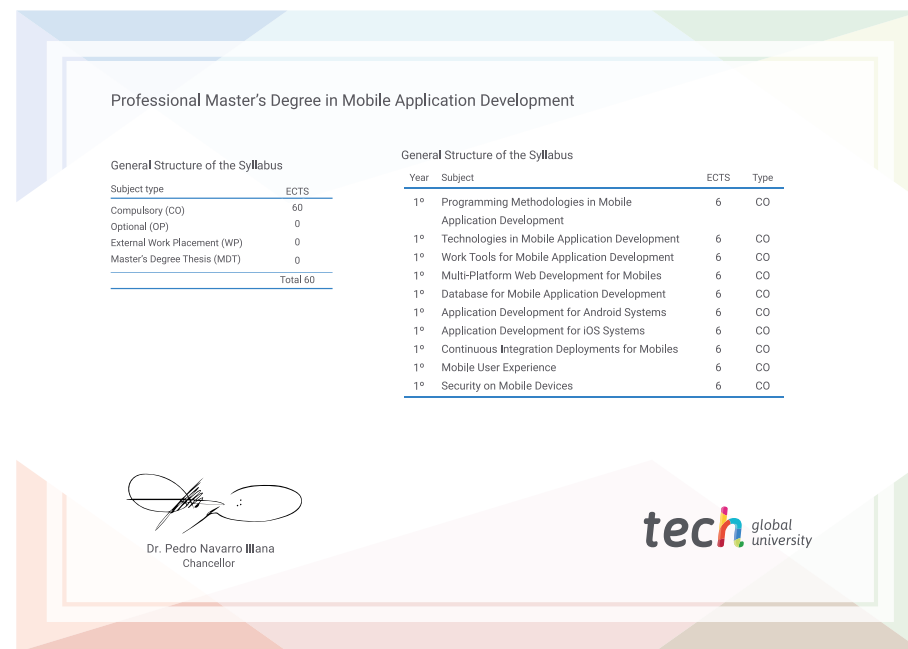
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Professional Master's Degree in Mobile Application Development**

Modality: **online**

Duration: **12 months**

Accreditation: **60 ECTS**



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



Professional Master's Degree  
Mobile Application  
Development

- » Modality: online
- » Duration: 12 months
- » Certificate: TECH Global University
- » Credits: 60 ECTS
- » Schedule: at your own pace
- » Exams: online

# Professional Master's Degree

## Mobile Application Development



Google Play

**tech** global  
university