Postgraduate Certificate
Programming and Software Development from Scratch

tech global university

Postgraduate Certificate
Programming and Software Development from Scratch

» Modality: **online**
» Duration: **6 weeks**
» Certificate: **TECH Global University**
» Accreditation: **6 ECTS**
» Schedule: **at your own pace**
» Exams: **online**

Website: **www.techtitute.com/us/information-technology/postgraduate-certificate/software-programming-development-scratch**

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01
Introduction to the Program

Nowadays, Programming and Software Development are fundamental disciplines in the advancement of technology and innovation. According to a UNESCO report, the number of software developers worldwide has grown by 20% in the last decade, reflecting the growing importance of these skills in the labor market. To respond to this demand, TECH has developed this Postgraduate Certificate that will offer a complete and up-to-date specialization in these disciplines. Using a 100% online methodology, specialists will delve into the fundamentals of programming and the main coding languages. In this way, they will acquire the necessary skills to tackle real projects, from the creation of simple applications to the development of more complex solutions.

Thanks to TECH, you will master the most widely used programming languages and access a world of opportunities in the technology sector. Enroll now, learn 100% online and take the first step towards the digital future!"

Programming and software development have become key disciplines in the modern digital world. From mobile applications to enterprise systems, software is at the heart of technological innovation. In fact, this solid foundation also facilitates the transition to new technologies and methodologies as they emerge. However, access to this knowledge has not always been easy for those without previous experience.

To respond to this need, TECH offers this innovative program in Programming and Software Development from Scratch, characterized by its progressive structure. Using a comprehensive approach, professionals will gradually acquire the fundamental skills to excel in programming. Through the syllabus, they will delve into the fundamentals of web development, databases, popular programming languages such as Python or Java, and best practices in software development. They will also master the concepts necessary to tackle real development projects from scratch, enabling them to create their own applications and computer systems.

Considering that the demand for programmers and developers continues to grow, and that companies are looking for profiles that not only have technical knowledge, but also the ability to solve real problems through software, this program is presented as the best opportunity to stand out in the area. Graduates will be ready to face new professional challenges in the technology field. They will also have a competitive advantage, as they will be equipped with modern and relevant tools to access a wide variety of job opportunities.

Finally, the program will be delivered 100% online, offering great flexibility to study from anywhere, anytime. In turn, the Relearning methodology will facilitate the assimilation of key concepts through constant repetition, ensuring that students retain the information and can apply it effectively. In short, this modality will allow them to balance their personal and professional lives while acquiring new skills.

This **Postgraduate Certificate in Programming and Software Development from Scratch** contains the most complete and up-to-date educational program on the market. Its most notable features are:

- The development of case studies presented by experts in programming
- The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- Practical exercises where self-assessment can be used to improve learning
- Special emphasis on innovative methodologies in Programming and Software Development from Scratch
- 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

You don't need any previous experience to enroll, just the will to continue acquiring knowledge. With the online methodology and Relearning, you will master Software Development in a practical and effective way"

" *The best experts in the market will guide you on your way as a programmer. You will prepare with specialized teachers and a syllabus designed to take you from beginner to developer. Get started now!"*

With a practical approach and the Relearning methodology, you will master the fundamentals of Software Development without complications. Learn from home, with no fixed schedule and 24/7 access!

Master Python, Java and web development with a practical and up-to-date syllabus. With the online methodology, you will advance at your own pace and without limits. Enroll today and get ready for the digital future!

Its teaching staff includes professionals from the field of programming, who bring their work experience to this program, as well as renowned specialists from leading companies 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 an immersive learning experience designed to prepare for real-life situations.

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

02
Why Study at TECH?

TECH is the world's largest online university. With an impressive catalog of more than 14,000 university programs available in 11 languages, it is positioned as a leader in employability, with a 99% job placement rate. In addition, it relies on an enormous faculty of more than 6,000 professors of the highest international renown.

Study at the world's largest online university and guarantee your professional success. The future starts at TECH"

The world's best online university, according to FORBES

The prestigious Forbes magazine, specialized in business and finance, has highlighted TECH as "the best online university in the world" This is what they have recently stated in an article in their digital edition in which they echo the success story of this institution, "thanks to the academic offer it provides, the selection of its teaching staff, and an innovative learning method oriented to form the professionals of the future".

The best top international faculty

TECH's faculty is made up of more than 6,000 professors of the highest international prestige. Professors, researchers and top executives of multinational companies, including Isaiah Covington, performance coach of the Boston Celtics; Magda Romanska, principal investigator at Harvard MetaLAB; Ignacio Wistumba, chairman of the department of translational molecular pathology at MD Anderson Cancer Center; and D.W. Pine, creative director of TIME magazine, among others.

The world's largest online university

TECH is the world's largest online university. We are the largest educational institution, with the best and widest digital educational catalog, one hundred percent online and covering most areas of knowledge. We offer the largest selection of our own degrees and accredited online undergraduate and postgraduate degrees. In total, more than 14,000 university programs, in ten different languages, making us the largest educational institution in the world.

Forbes
The best online university in the world

The most complete **syllabus**

TOP international faculty

The most effective methodology

World's No.1 The World's largest online university

The most complete syllabuses on the university scene

TECH offers the most complete syllabuses on the university scene, with programs that cover fundamental concepts and, at the same time, the main scientific advances in their specific scientific areas. In addition, these programs are continuously updated to guarantee students the academic vanguard and the most demanded professional skills. and the most in-demand professional competencies. In this way, the university's qualifications provide its graduates with a significant advantage to propel their careers to success.

A unique learning method

TECH is the first university to use Relearning in all its programs. This is the best online learning methodology, accredited with international teaching quality certifications, provided by prestigious educational agencies. In addition, this innovative academic model is complemented by the "Case Method", thereby configuring a unique online teaching strategy. Innovative teaching resources are also implemented, including detailed videos, infographics and interactive summaries.

The official online university of the NBA

TECH is the official online university of the NBA. Thanks to our agreement with the biggest league in basketball, we offer our students exclusive university programs, as well as a wide variety of educational resources focused on the business of the league and other areas of the sports industry. Each program is made up of a uniquely designed syllabus and features exceptional guest hosts: professionals with a distinguished sports background who will offer their expertise on the most relevant topics.

Leaders in employability

TECH has become the leading university in employability. Ninety-nine percent of its students obtain jobs in the academic field they have studied within one year of completing any of the university's programs. A similar number achieve immediate career enhancement. All this thanks to a study methodology that bases its effectiveness on the acquisition of practical skills, which are absolutely necessary for professional development.

G Google Partner — PREMIER 2023

The Official Online University of the **NBA**

4.9/5 ★★★★★ global score

99% maximun employability guaranteed

Google Premier Partner

The American technology giant has awarded TECH the Google Premier Partner badge. This award, which is only available to 3% of the world's companies, highlights the efficient, flexible and tailored experience that this university provides to students. The recognition not only accredits the maximum rigor, performance and investment in TECH's digital infrastructures, but also places this university as one of the world's leading technology companies.

The top-rated university by its students

Students have positioned TECH as the world's top-rated university on the main review websites, with a highest rating of 4.9 out of 5, obtained from more than 1,000 reviews. These results consolidate TECH as the benchmark university institution at an international level, reflecting the excellence and positive impact of its educational model.

03
Syllabus

Throughout a completely up-to-date syllabus, professionals will tackle the basic principles of programming and logical thinking, and develop skills in widely used languages such as Python or Java. In turn, they will delve into essential aspects such as data structures, algorithms, web development with HTML, CSS or JavaScript, SQL and NoSQL databases, version control with Git or GitHub and software architecture principles. Finally, they will master best practices in Software Engineering, agile methodologies such as Scrum and code debugging. All of this will ensure a comprehensive preparation adapted to the needs of the industry.

Thanks to this program, you will acquire a complete vision of the software creation process and develop functional projects from their first lines of code"

Module 1. Development Tools from Scratch: Linux, Version Control, CI/CD, Docker and Agile Methodologies

1.1.   Linux from Scratch

    1.1.1.   Linux

    1.1.2.   Differences between Linux and Other Operating Systems

    1.1.3.   Popular Linux Distributions for Developers

    1.1.4.   Configuration and Customization of the Development Environment

    1.1.5.   Text Editors in Linux

1.2.   Using the Linux Terminal from Scratch

    1.2.1.   The Terminal. Uses and Functions

    1.2.2.   Navigation Commands and File Management in the Terminal

    1.2.3.   File and Directory Permissions in Linux

    1.2.4.   Command Redirection and Use of Pipes to Optimize Tasks

1.3.   Version Control with Git from Scratch

    1.3.1.   Git: Cloud Providers

    1.3.2.   Creation and Management of Repositories

    1.3.3.   Workflow: git init, git add, git commit and git status

    1.3.4.   Working with Branches: Creation, Merging and Conflict Resolution

1.4.   Collaborating in Teams with GitHub from Scratch

    1.4.1.   GitHub: Remote Repositories

    1.4.2.   Connecting a Local Repository to GitHub: git remote. Initial Configuration

    1.4.3.   Synchronization with Remote Repositories

    1.4.4.   Pull Requests and Collaborative Code Review

1.5.   CI/CD (I) - Continuous Integration (CI) with GitHub Actions from Scratch

    1.5.1.   Continuous Integration (CI)

    1.5.2.   Workflow Configuration in GitHub Actions

    1.5.3.   Automation of Tests and Deployments

1.6.   Docker from Scratch

    1.6.1.   Docker and Containers

    1.6.2.   Docker Installation and Configuration

    1.6.3.   Docker Container Creation and Management

    1.6.4.   Dockerfiles: Custom Image Creation

You will have access to study material, interactive summaries and complementary reading that will prepare you to reach your maximum potential in Programming and Software Development from Scratch"

04

Teaching Objectives

The main objective of this program is to provide the knowledge and skills necessary for professionals to successfully develop in the technology sector. To this end, the program will focus on understanding the fundamentals of programming, developing logical thinking and the ability to structure efficient solutions to computational problems. Through a progressive and practical approach, they will not only acquire theoretical knowledge, but also apply it in real projects, allowing them to strengthen their skills in Software Development.

"

Not only will you know how to program, but you will also be able to optimize your solutions, improve the quality of your projects and adapt to the demands of the modern labor market, which is increasingly competitive and dynamic"

General Objectives

- Acquire fundamental knowledge of programming and software development
- Develop skills in programming languages such as Python and Java
- Implement data structures and algorithms for problem solving
- Design and develop web applications using HTML, CSS and JavaScript
- Manage SQL and NoSQL databases to store and manipulate information
- Use version control tools such as Git and GitHub for code management
- Apply agile methodologies such as Scrum in software development
- Perform code testing and debugging to guarantee functionality and efficiency
- Integrate security principles in the development of applications and systems
- Develop the ability to work independently and in teams on software projects
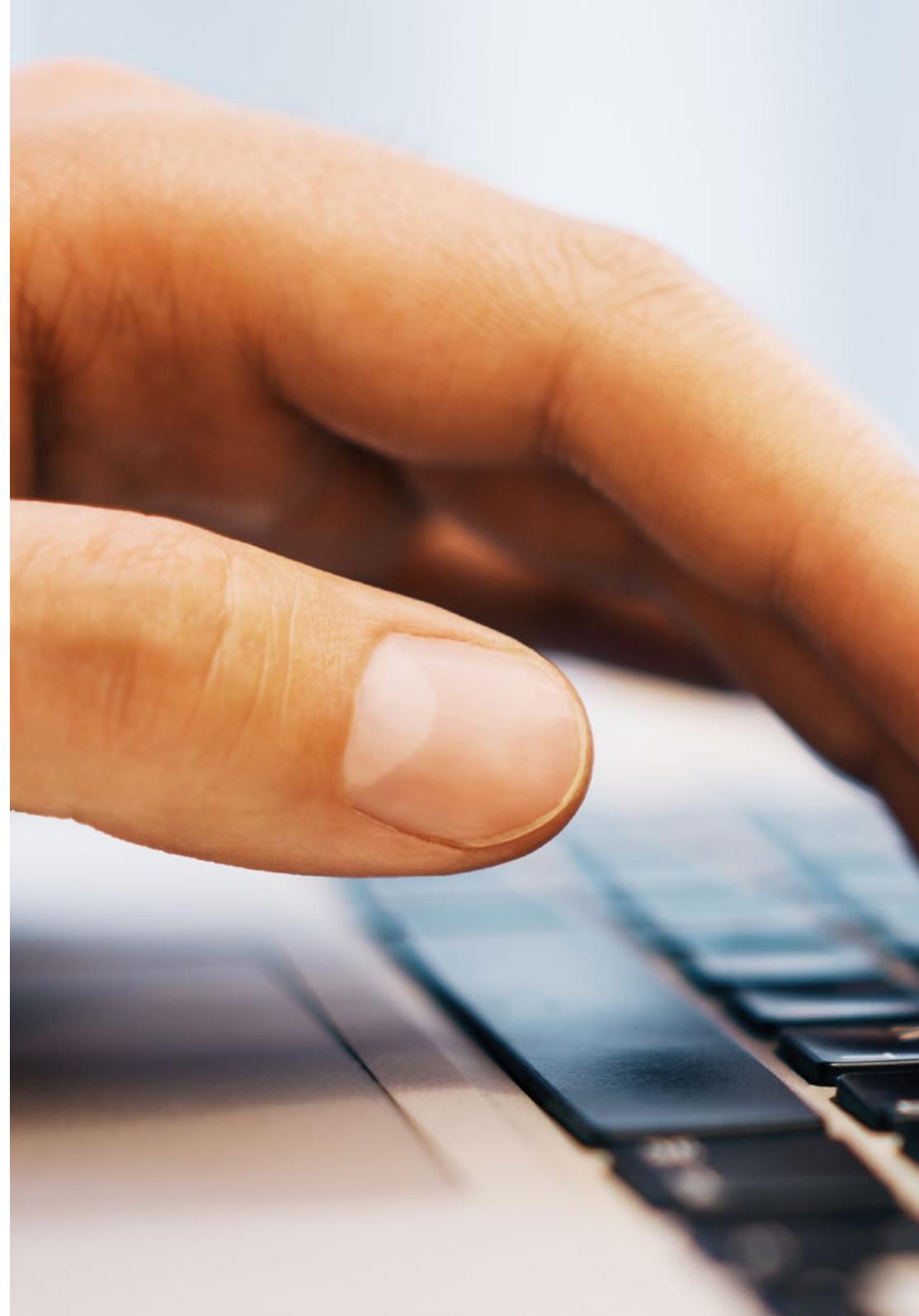
Specific Objectives

- Operate the Linux operating system at the command line level
- Master the use of Git for version control
- Implement Continuous Integration and Deployment (CI/CD) pipelines
- Create and manage Docker containers

Thanks to TECH's 99% employability, you will conquer the labor market, backed by an innovative teaching quality that will allow you to succeed in Programming and Software Development"

05
Study Methodology

TECH is the world's first university to combine the **case study** methodology with **Relearning**, a 100% online learning system based on guided repetition.

This disruptive pedagogical strategy has been conceived to offer professionals the opportunity to update their knowledge and develop their skills in an intensive and rigorous way. A learning model that places students at the center of the educational process giving them the leading role, adapting to their needs and leaving aside more conventional methodologies.

TECH will prepare you to face new challenges in uncertain environments and achieve success in your career"

## The student: the priority of all TECH programs

In TECH's study methodology, the student is the main protagonist.
The teaching tools of each program have been selected taking into account the demands of time, availability and academic rigor that, today, not only students demand but also the most competitive positions in the market.

With TECH's asynchronous educational model, it is students who choose the time they dedicate to study, how they decide to establish their routines, and all this from the comfort of the electronic device of their choice. The student will not have to participate in live classes, which in many cases they will not be able to attend. The learning activities will be done when it is convenient for them. They can always decide when and from where they want to study.

" *At TECH you will NOT have live classes (which you might not be able to attend)"*
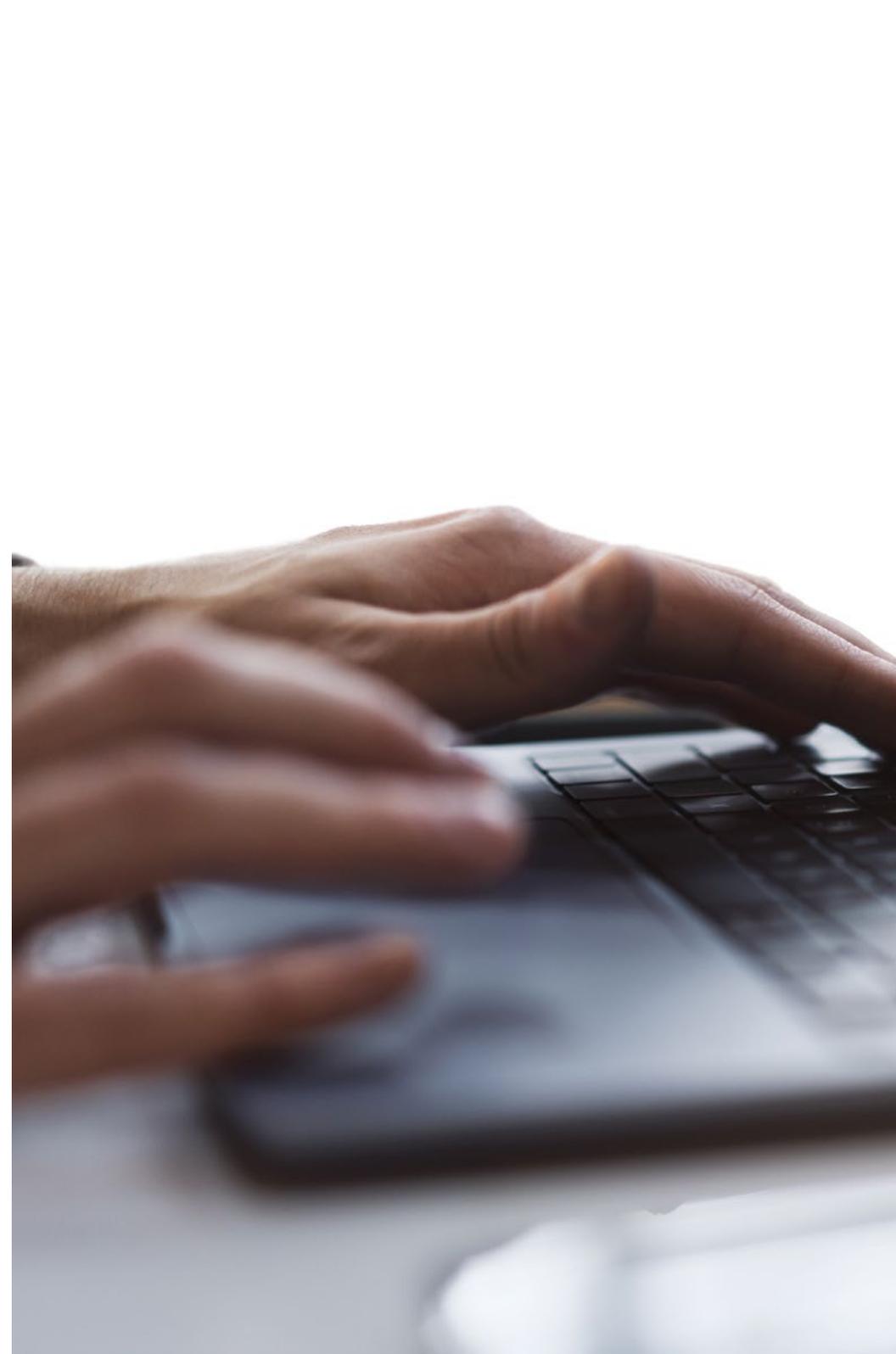
The most comprehensive study plans at the international level

TECH is distinguished by offering the most complete academic itineraries on the university scene. This comprehensiveness is achieved through the creation of syllabi that not only cover the essential knowledge, but also the most recent innovations in each area.

By being constantly up to date, these programs allow students to keep up with market changes and acquire the skills most valued by employers. In this way, those who complete their studies at TECH receive a comprehensive education that provides them with a notable competitive advantage to further their careers.

And what's more, they will be able to do so from any device, pc, tablet or smartphone.

TECH's model is asynchronous, so it allows you to study with your pc, tablet or your smartphone wherever you want, whenever you want and for as long as you want"

Case Studies and Case Method

The case method has been the learning system most used by the world's best business schools. Developed in 1912 so that law students would not only learn the law based on theoretical content, its function was also to present them with real complex situations. In this way, they could make informed decisions and value judgments about how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

With this teaching model, it is students themselves who build their professional competence through strategies such as Learning by Doing or Design Thinking, used by other renowned institutions such as Yale or Stanford.

This action-oriented method will be applied throughout the entire academic itinerary that the student undertakes with TECH. Students will be confronted with multiple real-life situations and will have to integrate knowledge, research, discuss and defend their ideas and decisions. All this with the premise of answering the question of how they would act when facing specific events of complexity in their daily work.

Relearning Methodology

At TECH, case studies are enhanced with the best 100% online teaching method: Relearning.

This method breaks with traditional teaching techniques to put the student at the center of the equation, providing the best content in different formats. In this way, it manages to review and reiterate the key concepts of each subject and learn to apply them in a real context.

In the same line, and according to multiple scientific researches, reiteration is the best way to learn. For this reason, TECH offers between 8 and 16 repetitions of each key concept within the same lesson, presented in a different way, with the objective of ensuring that the knowledge is completely consolidated during the study process.

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

01 learning from evidence

02 relearning from evidence

03 testing

04 learning from an expert

05 neurocognitive context dependent learning

06 Von-Restorff effect

07 case based learning through storytelling

08 competencies testing (retesting)

A 100% online Virtual Campus with the best teaching resources

In order to apply its methodology effectively, TECH focuses on providing graduates with teaching materials in different formats: texts, interactive videos, illustrations and knowledge maps, among others. All of them are designed by qualified teachers who focus their work on combining real cases with the resolution of complex situations through simulation, the study of contexts applied to each professional career and learning based on repetition, through audios, presentations, animations, images, etc.

The latest scientific evidence in the field of Neuroscience points to the importance of taking into account the place and context where the content is accessed before starting a new learning process. Being able to adjust these variables in a personalized way helps people to remember and store knowledge in the hippocampus to retain it in the long term. This is a model called Neurocognitive context-dependent e-learning that is consciously applied in this university qualification.

In order to facilitate tutor-student contact as much as possible, you will have a wide range of communication possibilities, both in real time and delayed (internal messaging, telephone answering service, email contact with the technical secretary, chat and videoconferences).

Likewise, this very complete Virtual Campus will allow TECH students to organize their study schedules according to their personal availability or work obligations. In this way, they will have global control of the academic content and teaching tools, based on their fast-paced professional update.

The online study mode of this program will allow you to organize your time and learning pace, adapting it to your schedule"

The effectiveness of the method is justified by four fundamental achievements:

1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that assess real situations and the application of knowledge.

2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.

3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.

4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.

The university methodology top-rated by its students

The results of this innovative teaching model can be seen in the overall satisfaction levels of TECH graduates.

The students' assessment of the teaching quality, the quality of the materials, the structure of the program and its objectives is excellent. Not surprisingly, the institution became the top-rated university by its students according to the global score index, obtaining a 4.9 out of 5.

Access the study contents from any device with an Internet connection (computer, tablet, smartphone) thanks to the fact that TECH is at the forefront of technology and teaching.

You will be able to learn with the advantages that come with having access to simulated learning environments and the learning by observation approach, that is, Learning from an expert.

As such, the best educational materials, thoroughly prepared, will be available in this program:

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.

This content is then adapted in an audiovisual format that will create our way of working online, with the latest techniques that allow us to offer you high quality in all of the material that we provide you with.

Practicing Skills and Abilities

You will carry out activities to develop specific competencies and skills in each thematic field. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop within the framework of the globalization we live in.

Interactive Summaries

We present 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".

Additional Reading

Recent articles, consensus documents, international guides... In our virtual library you will have access to everything you need to complete your education.

20%

15%

15%

3%

20%

17%

7%

3%
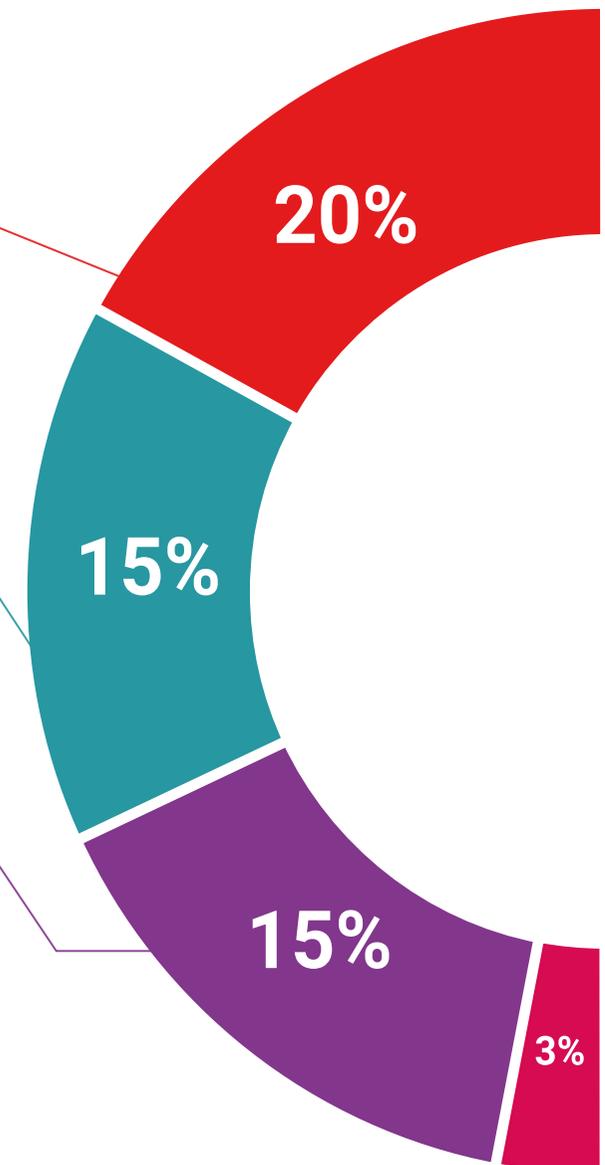
Case Studies

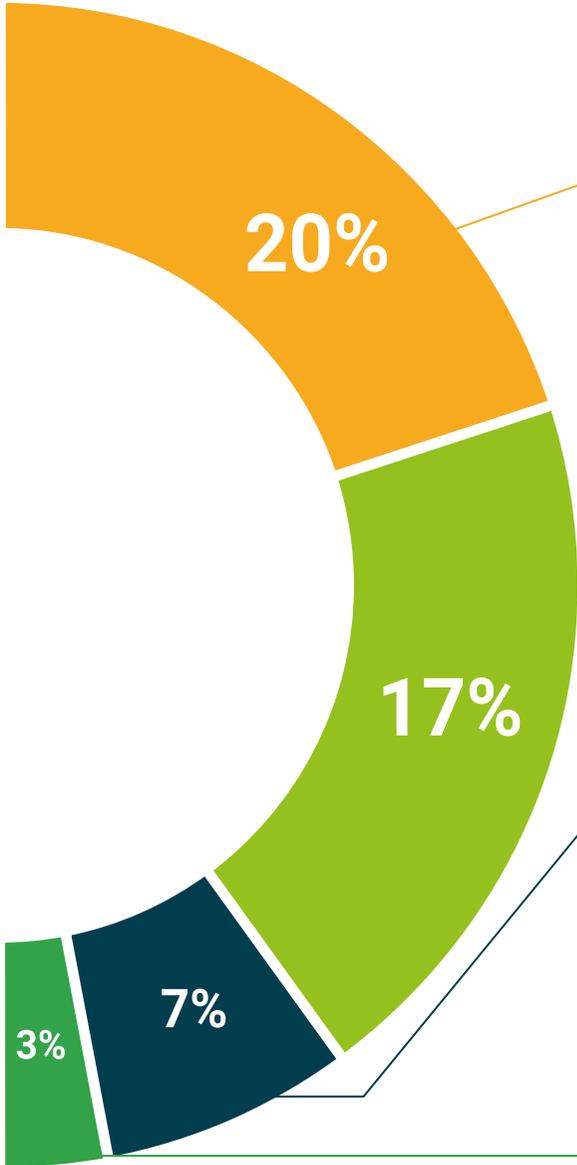Students will complete a selection of the best case studies in the field. Cases that are presented, analyzed, and supervised by the best specialists in the world.

Testing & Retesting

We periodically assess and re-assess your knowledge throughout the program. We do this on 3 of the 4 levels of Miller's Pyramid.

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 for future difficult decisions.

Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical and effective way to help students progress in their learning.

Teaching Staff

This qualification has a highly qualified teaching staff, made up of experts in software engineering, web development, databases and agile methodologies. Each of them brings not only a deep theoretical knowledge, but also a valuable practical experience acquired in the technology sector, which allows students to face real scenarios from the very beginning. Likewise, the mentors are active professionals with experience in technology companies, innovative start-ups and international software projects.

" TECH's teaching staff is distinguished by its innovative teaching approach, based on the application of practical cases and the resolution of real problems. What are you waiting for to learn from the best? Enroll now"

Management

Dr. Lucas Cuesta, Juan Manuel

- Senior Software Engineer and Analyst at Indizen – Believe in Talent
- Senior Software Engineer and Analyst at Krell Consulting and IMAGiNA Artificial Intelligence
- Software Engineer at Intel Corporation
- Software Engineer at Intelligent Dialog Systems
- PhD in Electronic Systems Engineering for Intelligent Environments from the Polytechnic University of Madrid
- Graduate in Telecommunications Engineering at the Polytechnic University of Madrid
- Master's Degree in Electronic Systems Engineering for Intelligent Environments from the Polytechnic University of Madrid

Mr. Márquez Ruiz de Lacanal, Juan Antonio

- Software Developer at GTD Defense & Security Solutions
- Software Developer at Solera Inc
- Development and Research Engineer at GRVC Sevilla
- Co-founder of Unmute
- Co-founder of VR Educa
- Academic Exchange in Engineering and Entrepreneurship at the University of California, Berkeley
- Degree in Industrial Engineering from the University of Sevilla

Professors

Mr. Péris Millán, Eduardo

- Director of the Technological Consultancy Department
- Specialist in Computer Engineering
- Master's Degree in Strategic Management of Information and Knowledge in Organizations
- Master's Degree in Leadership and Public Management
- Expert in Public Management
- Expert in Computer Systems for Smart CITIES

"A unique, key and decisive learning experience to boost your professional development"

Certificate

This Postgraduate Certificate in Programming and Software Development from Scratch guarantees, in addition to the most rigorous and up-to-date program, access to an Postgraduate Certificate diploma issued by TECH Global University.

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

This private qualification will allow you to obtain a diploma for the **Postgraduate Certificate in Programming and Software Development from Scratch** 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** private qualification, 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: **Postgraduate Certificate in Programming and Software Development from Scratch**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**

tech global university

Mr./Ms. _____, with identification document _____
has successfully passed and obtained the title of:

Postgraduate Certificate in Programming and Software Development from Scratch

This is a private qualification of 180 hours of duration equivalent to 6 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024

Dr. Pedro Navarro Illana
Dean

Unique TECH Code: AFWORD23S   techtitute.com/certificates

*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.

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