Postgraduate Certificate

Database Management and Optimization from Scratch

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Postgraduate Certificate
Database Management and Optimization 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/database-management-optimization-scratch**

Index

01
Introduction to the Program

Database Management and Optimization has become a crucial component for modern organizations seeking to improve their operational efficiency and make data-driven decisions more quickly and accurately. According to the International Institute of Information Technology Research (IIIT), more than 60% of companies worldwide are investing significantly in database optimization as a strategy to improve performance and reduce operational costs. Living in an increasingly data-centric business environment, TECH has devised this Postgraduate Certificate that will offer a complete education, from the basics to the most advanced techniques. All of this, based on a 100% online methodology and an up-to-date syllabus.

You will master database management from scratch and transform your professional profile. Thanks to TECH you will design efficient systems and optimize database performance. Take the next step in your career!"

Database Management and Optimization is an essential component for the success of organizations in the digital age. In fact, the ability to store, organize and access large volumes of data efficiently not only improves performance, but also enables faster and more accurate decision making. In an increasingly competitive environment, companies require professionals capable of managing robust, scalable and optimized database systems.

To respond to this demand, TECH has designed this program in Database Management and Optimization from Scratch, which will offer a comprehensive approach, covering everything from the fundamentals to the most advanced techniques. Based on a comprehensive and multidisciplinary approach, professionals will master database design and standardization, index management, efficient queries, and information security, among others. In addition, they will delve into the use of both relational and non-relational databases, adapting to the needs of different types of applications and business environments.

In this sense, the program will give a significant advantage in the professional field, since database optimization is a key skill that many companies are looking for. On completion, graduates will be able to improve the performance of database systems in any organization, optimizing response times and guaranteeing information security. They will be able to lead in a field with high labor demand and find opportunities for continuous growth.

In addition, the Postgraduate Certificate will be taught 100% online, allowing students to manage their time flexibly without sacrificing educational quality. In turn, the Relearning methodology, based on the repetition of key concepts, will ensure that knowledge is assimilated effectively. Finally, the materials will be available 24 hours a day, facilitating access from anywhere and at any time, adapting to the needs and schedules of specialists.

This **Postgraduate Certificate in Database Management and Optimization 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 the self-assessment process can be carried out to improve learning
- Special emphasis on innovative methodologies in Database Management and Optimization 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

Ready to boost your career? This program will provide you with the tools to excel in the digital world. Enjoy the online methodology and practical approach of Relearning"

Optimize database performance with the best online Postgraduate Certificate on the market. TECH offers you access to up-to-date materials and a flexible methodology, designed to enable you to learn at your own pace.

You will be taught by the best professors in the field and will gain the necessary skills to manage and optimize databases efficiently. Enroll today and improve your professional profile!

" *Transform your future with this program. You will master everything from the fundamentals to the most advanced database optimization techniques, through a practical and dynamic approach"*

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.

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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 comprehensive syllabus, professionals will address fundamental topics such as relational database design, data normalization and the use of indexes to improve performance. They will also delve into the creation and optimization of SQL queries, the management of NoSQL databases and the implementation of security strategies to protect data. Finally, they will delve into advanced optimization techniques such as improving database scalability in high-traffic environments, data replication, and the use of partitioning and sharding, among others.

"Thanks to this online program, you will be perfectly prepared to face the challenges of today's technological environment"

Module 1. Database Management and Optimization from Scratch

1.1.   Database from Scratch

    1.1.1.   Databases. Types

    1.1.2.   Relational vs. Non-relational Databases

    1.1.3.   SQL and NoSQL Programming Languages

1.2.   Relational Data Modeling

    1.2.1.   Relational Database Model

    1.2.2.   Tables, Rows, and Columns in a Relational Database

    1.2.3.   Primary and Foreign Keys: Relationships Between Tables

    1.2.4.   Normalization: 1NF, 2NF, 3NF

1.3.   SQL Language: DML and DDL

    1.3.1.   SQL: Structured Query Language

    1.3.2.   Create and Delete Queries: CREATE, DROP

    1.3.3.   SELECT, INSERT, UPDATE and DELETE Queries

    1.3.4.   Filtering and Sorting Data with SQL

1.4.   Advanced SQL Queries

    1.4.1.   Joins: INNER JOIN and OUTER JOIN

    1.4.2.   Subqueries and Nested Queries

    1.4.3.   Aggregate Functions in SQL: SUM, AVG, COUNT

1.5.   NoSQL Databases and MongoDB

    1.5.1.   NoSQL Database

    1.5.2.   Comparison between SQL and NoSQL

    1.5.3.   MongoDB: Document Database

    1.5.4.   Flexible Schemas in NoSQL

1.6.   Database Optimization

    1.6.1.   Importance of Query Optimization

    1.6.2.   Using Indexes in Relational Databases

    1.6.3.   NoSQL Database Optimization

1.7.   Database Security

    1.7.1.   Database Security

    1.7.2.   Encryption of Sensitive Data

    1.7.3.   User and Permission Management in Databases

    1.7.4.   Database Protection Strategies against Attacks

From database design to security, you will prepare to master the industry's best practices. Take the next step and become a technology leader!"

04

Teaching Objectives

The main goal of this program is to prepare professionals to efficiently manage databases, from the fundamental concepts to advanced optimization techniques. Throughout the program, you will learn to design, implement and manage relational and non-relational databases, guaranteeing their performance and scalability in different environments. Thanks to this comprehensive approach, you will gain a deep understanding of database management systems (DBMS) and their application in the real world.

"With the knowledge you acquire, you will be ready to take on key roles in the area of technology and databases, contributing to the growth and success of the organizations you work for"

General Objectives

- Understand the fundamentals of relational and non-relational databases
- Design efficient and optimized database structures for different applications
- Implement advanced queries using SQL to extract and manipulate data
- Configure database management systems such as MySQL, PostgreSQL or MongoDB
- Apply normalization techniques to improve data performance and integrity
- Manage large volumes of data using indexes and partitioning
- Implement database backup and recovery strategies to avoid information loss
- Optimize database performance through analysis and configuration adjustments
- Ensure data security through permissions and encryption settings
- Integrate databases with external applications and systems in an efficient and scalable manner
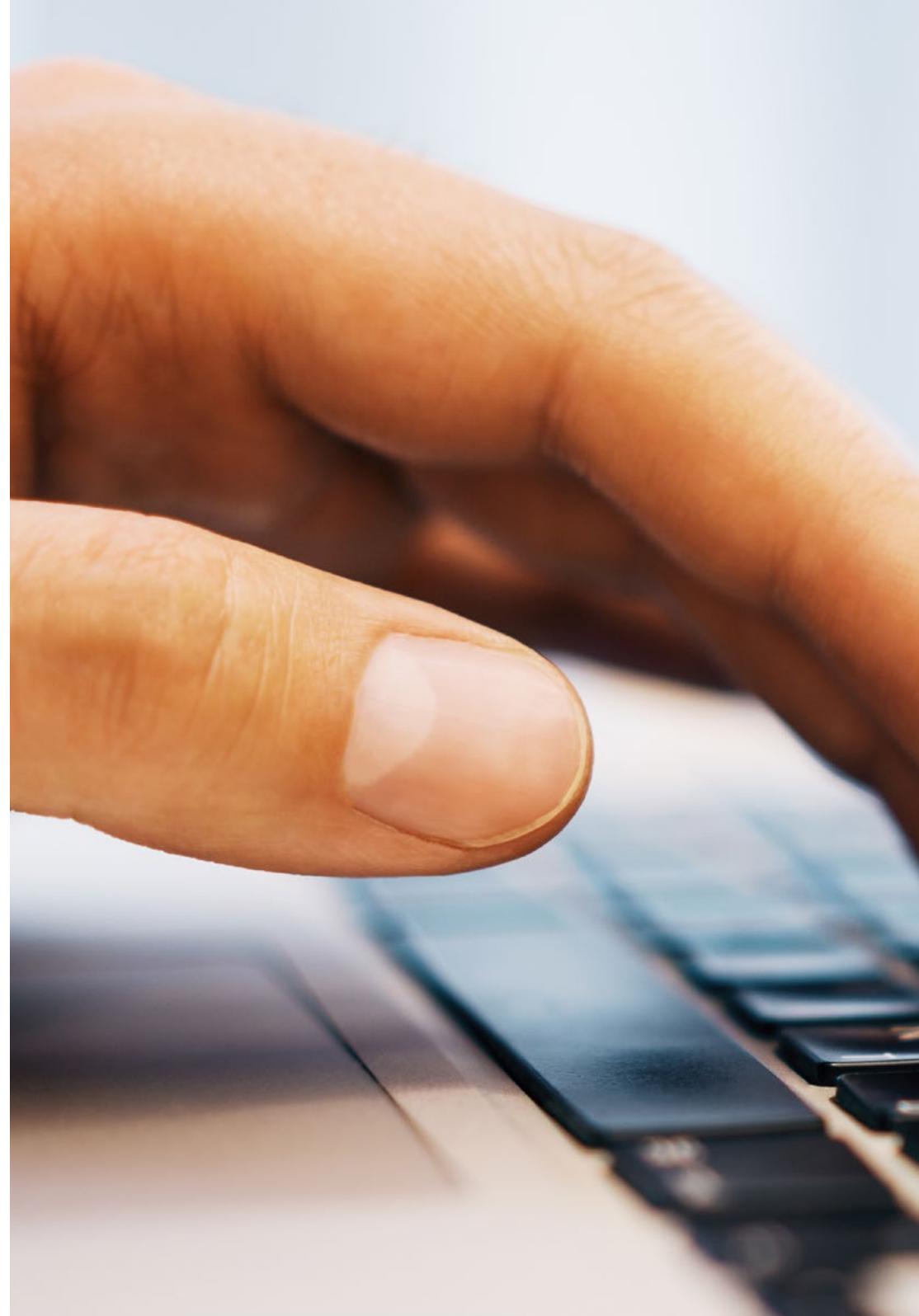
Specific Objectives

- Identify the different types of databases and their characteristics
- Understand and apply the relational data model
- Develop SQL skills for database management
- Use advanced SQL queries

Do you want to manage and optimize databases efficiently? From the comfort of your home you will be able to achieve your goals. Enroll now and benefit from the best online methodology on the market"

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)"
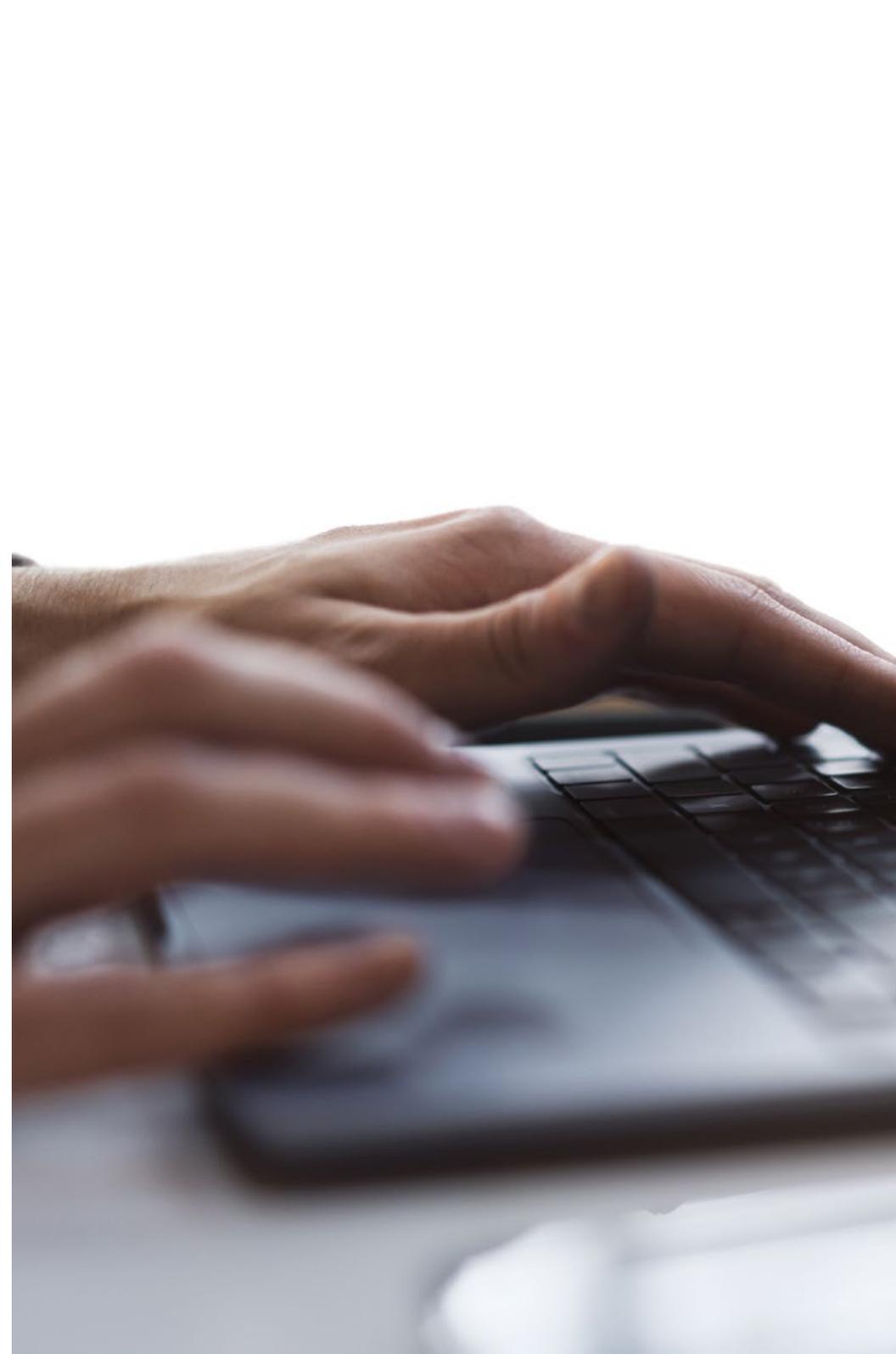
The most comprehensive study plans at the international level

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%
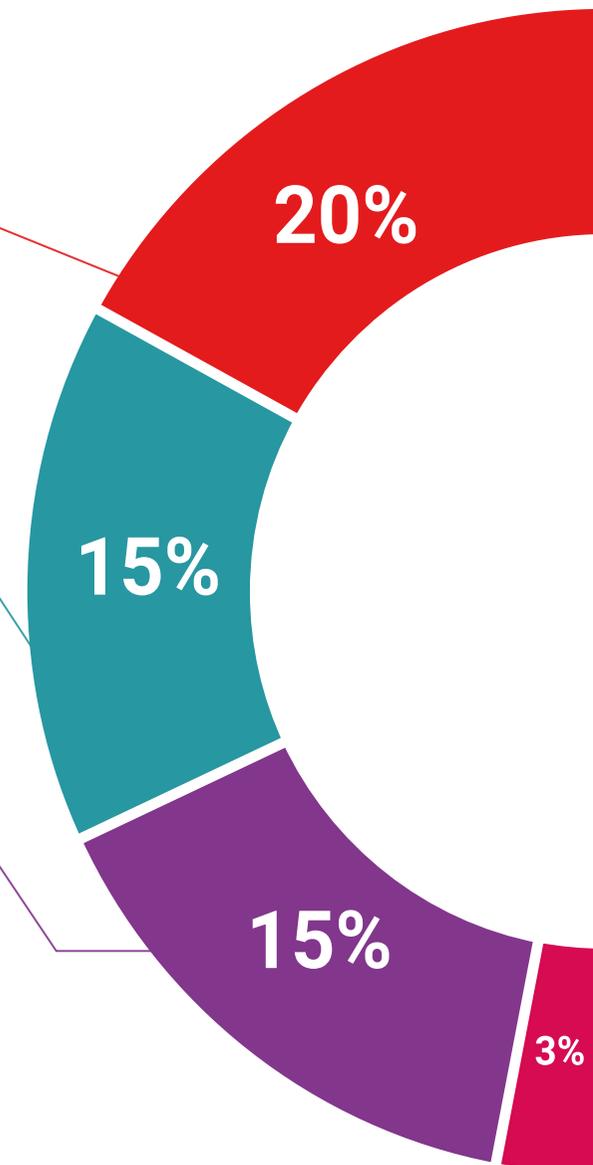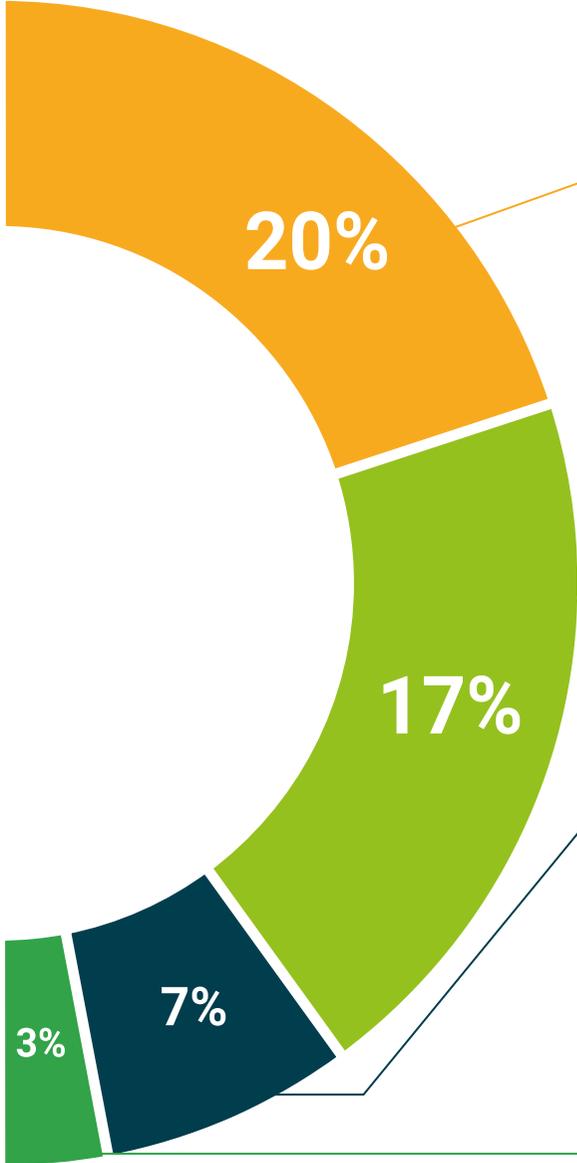
Case Studies

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 stands out for having a teaching staff made up of high-level professionals with solid experience in both the academic field and industry. In fact, the professors who teach this program are database experts with in-depth knowledge of the most advanced technologies and best practices in the sector. In addition to their technical expertise, each of them brings a practical and up-to-date approach, ensuring that students receive quality education with relevant content applicable to current market challenges.
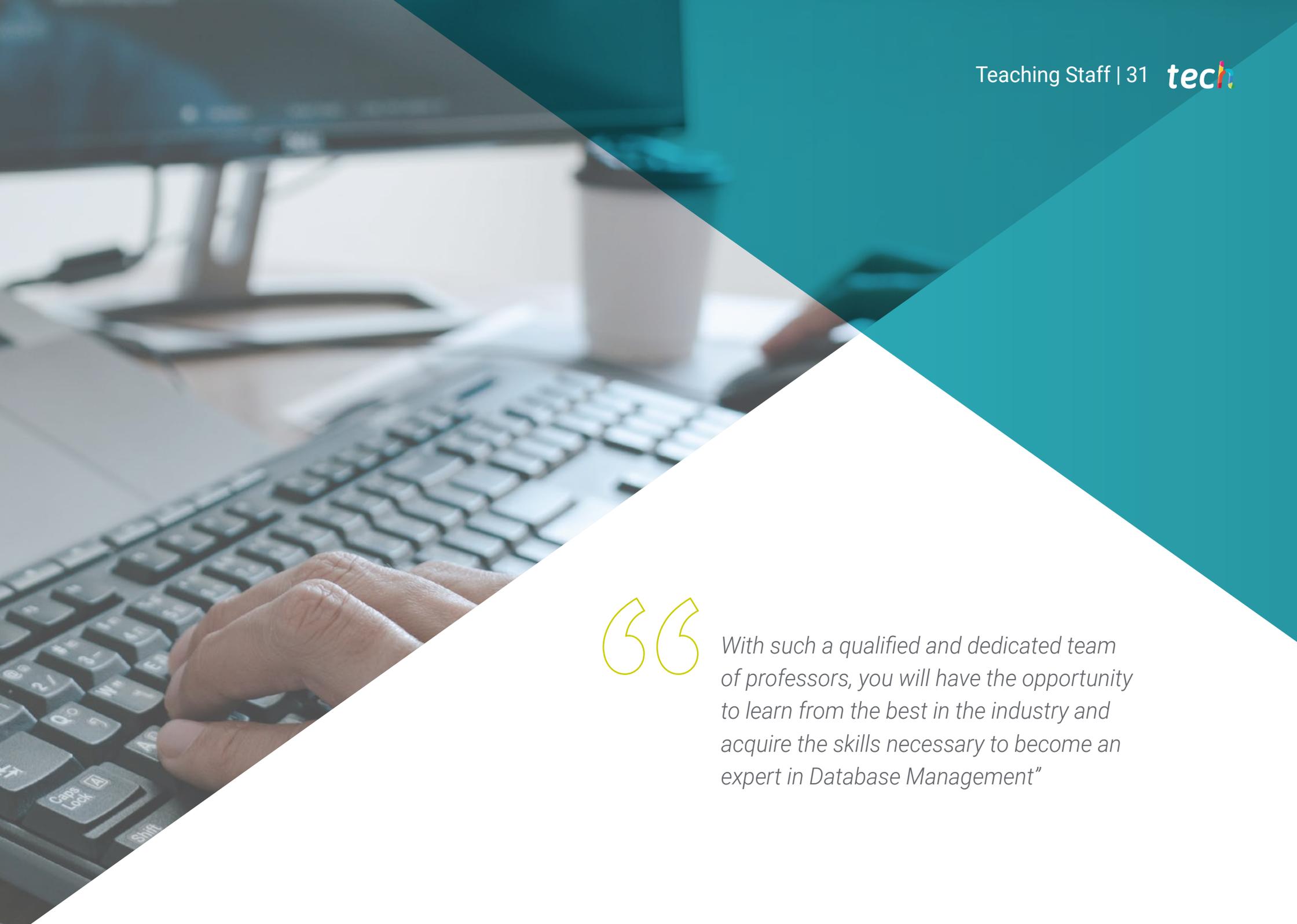
With such a qualified and dedicated team of professors, you will have the opportunity to learn from the best in the industry and acquire the skills necessary to become an expert in Database Management"

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. Pi Morell, Oriol

- Functional Analyst at Fihoca
- Hosting and Mail Product Owner CDMON
- Functional Analyst and Software Engineer at Atmira and CapGemini
- Teacher at ORACLE Forms CapGemini and Atmira
- Professional Master's Degree in Technical Engineering in Computer Management from the Autonomous University of Barcelona.
- Master's Degree in Artificial Intelligence from the Catholic University of Avila
- Professional's Degree in Business Administration and Management by IMF Smart Education
- Master's Degree in Information of Systems Management by IMF Smart Education
- Postgraduate Degree in Design in Patterns from the Open University of Catalonia

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

07
Certificate

This Postgraduate Certificate in Database Management and Optimization 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 Database Management and Optimization 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 Database Management and Optimization 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 Database Management and Optimization 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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