Postgraduate Certificate
Development of New Drugs with Artificial Intelligence

tech global university

Postgraduate Certificate
Development of New Drugs with Artificial Intelligence

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

Website: **www.techtitute.com/us/pharmacy/postgraduate-certificate/development-new-drugs-artificial-intelligence**

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01
Introduction to the Program

Artificial Intelligence is radically transforming the development of new drugs, optimizing processes that traditionally required years of research. According to a report published by Deloitte, the average time to bring a drug from discovery to market has decreased significantly in recent years thanks to the integration of algorithms and Big Data analysis. Against this backdrop, TECH has developed this program, which will cover everything related to one of the most innovative fields in the pharmaceutical industry. With the support of advanced tools and a 100% online methodology, specialists will delve into the transformation of traditional drug discovery processes, the identification of compounds, the prediction of interactions and the personalization of treatments.

This 100% online postgraduate program will prepare you not only for the present, but also for the future of pharmacology, providing you with skills that are in high demand in a global market in constant evolution"

New Drug Development with Artificial Intelligence has changed the way in which the challenges of the pharmaceutical industry and modern Pharmacy are addressed. In an environment where innovation is key, the use of AI allows the optimization of complex processes, from the identification of promising molecules, to the personalization of therapies, offering more effective and accessible solutions to treat diseases. Ultimately, this approach ensures faster and more effective access to innovative treatments, significantly improving the quality of life of millions of people around the world.

Against this backdrop, TECH has developed this Postgraduate Certificate in Development of New Drugs with Artificial Intelligence that will offer an innovative and practical perspective on one of the most advanced fields in the pharmaceutical industry. From a comprehensive and multidisciplinary approach, professionals will acquire specialized knowledge in the use of Artificial Intelligence tools for the analysis of biomedical data, the understanding of algorithms applied to Biomedicine and the exploration of predictive models that are revolutionizing drug development. In this way, they will know how to address current challenges such as cost reduction, drug development times and the management of safer and personalized therapies.

From this, graduates will enhance their professional profile in a dynamic and constantly evolving environment. As a result, the skills acquired will not only represent a competitive advantage in the labor market, but will also position them in a sector with a high demand for specialists capable of integrating advanced technology in pharmaceutical projects.

At the same time, the 100% online modality is presented as a unique opportunity to train in a flexible and effective way, adapted to the needs of today's students. This in turn will be complemented by the innovative Relearning methodology, which will optimize the learning process through the strategic repetition of key content in different contexts and formats, promoting a deep and lasting understanding without the need to overload with extensive memorization.

The **Postgraduate Certificate in Development of New Drugs with Artificial Intelligence** contains the most complete and up-to-date academic program on the market. Its most notable features are:

- The development of case studies presented by experts with a deep understanding of New Drug Development with AI

- The graphic, schematic and eminently practical content of the book provides scientific and practical information on those disciplines that are essential for professional practice

- Practical exercises where the process of self-assessment can be used to improve learning

- Its special emphasis on innovative methodologies

- Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments

- Content that is accessible from any fixed or portable device with an Internet connection

"

Choosing TECH's methodology not only contributes to academic improvement, but also guarantees you a solid preparation that aligns with the demands of the global market to boost your career"

"*Revolutionize your pharmaceutical career with a program that combines Artificial Intelligence, case studies and Relearning methodology. You'll know how to develop medicines of the future from the comfort of your home!*"

Do you want to be part of pharmaceutical innovation? This program designed by international experts will propel you to master AI tools and stand out in a constantly evolving market: pharmacology.

Studying online with TECH ensures a modern academic experience, accessible and focused on empowering your professional future in the Development of New Drugs with Artificial Intelligence.
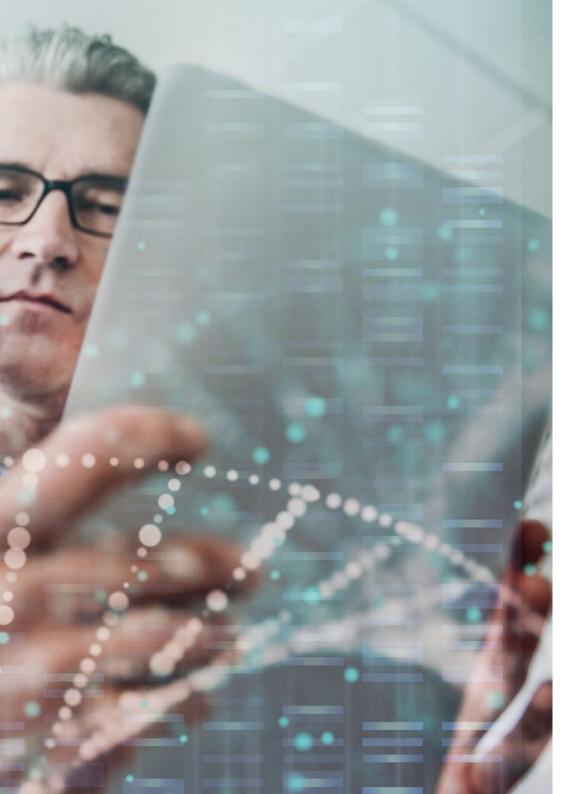
The program's teaching staff includes professionals from the field who contribute their work experience to this educational program, as well as renowned specialists from leading societies and prestigious universities.

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

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

02
Syllabus

The curriculum of this program will provide a comprehensive and cutting-edge academic experience, aligned with the current needs of the pharmaceutical sector. In this sense, the professionals will be introduced to the most innovative applications of Artificial Intelligence in the design, testing and optimization of new drugs, integrating knowledge in Biotechnology, Bioinformatics and data analysis. They will also cover from the identification of compounds to the personalization of treatments, ensuring that graduates acquire key skills to contribute to the advancement of modern Pharmacy.

"

TECH will provide you with an unparalleled syllabus, which will be available on an interactive platform, 24 hours a day. With this flexibility, you will be able to learn at the times that best suit you"

Module 1. Development of New Drugs with Artificial Intelligence

1.1. Identification of Therapeutic Targets with AI
    1.1.1. Concept of Therapeutic Targets and Their Importance in Pharmacology
    1.1.2. AI Algorithms for the Identification of Potential Targets
    1.1.3. Neural Network Models in Therapeutic Target Prediction
    1.1.4. Examples such as Insilico Medicine for Target Discovery

1.2. AI-Assisted Drug Design
    1.2.1. AI-Assisted Molecular Design Techniques
    1.2.2. Computational Modeling in Drug Design
    1.2.3. Molecule Generation with Deep Learning
    1.2.4. Applications such as Atomwise in Drug Discovery

1.3. Pharmaceutical Compound Optimization
    1.3.1. Optimization Processes in Drug Development
    1.3.2. AI Techniques for Improving Composite Properties
    1.3.3. Molecular Simulation Tools in Drug Optimization
    1.3.4. Examples of Platforms such as Schrodinger for Optimization

1.4. Simulation of Drug-Receptor Interactions
    1.4.1. Importance of Drug-Receptor Interactions
    1.4.2. Molecular Simulation Techniques in Pharmacology
    1.4.3. AI Algorithms for Predicting Molecular Interactions
    1.4.4. Tools such as Cresset for Interaction Simulation

1.5. Generation of Bioactive Compound Libraries
    1.5.1. Creation of Compound Libraries in Drug Development
    1.5.2. AI in the Generation and Classification of Compounds
    1.5.3. Virtual Screening of Bioactive Compounds
    1.5.4. Example of Tools such as Chemoinformatics from ChemAxon

1.6. Preclinical Hypothesis Validation with AI
    1.6.1. Preclinical Stage Hypothesis Validation
    1.6.2. AI Models for Testing in Preclinical Experimentation
    1.6.3. Predictive Analytical Tools for Preclinical Analysis
    1.6.4. Case of BenevolentAI in Preclinical Research

Get ready to boost your career in pharmacology with quality, self-paced training. Take advantage of the most up-to-date curriculum in the Development of New Drugs with Artificial Intelligence!"

03

Teaching Objectives

This Postgraduate Certificate will offer industry professionals the opportunity to lead this disruptive change. With an innovative approach, this online program will combine scientific and technological knowledge to transform the traditional process of drug design and testing. One of the main purposes of this postgraduate program will be to provide an in-depth understanding of how Artificial Intelligence is redefining pharmaceutical research. From molecule identification to clinical trial design, this academic pathway will cover the latest tools and techniques that optimize these processes, reduce costs and development times.

This program will give you the flexibility you need to combine your academic growth with your working life. Take advantage of this unique opportunity and become a reference in AI drug development"

General Objectives

- Understand the fundamentals of artificial intelligence applied to pharmaceutical development
- Analyze biomedical and genomic data to identify potential therapeutic compounds
- Design innovative strategies for the research and testing of new drugs
- Apply machine learning techniques in the prediction of clinical outcomes
- Optimize drug development processes using advanced digital tools
- Implement deep neural networks in the identification of relevant biomarkers
- Develop personalized pharmacological solutions tailored to the patient's needs
- Lead innovation projects in the pharmaceutical industry using AI technologies

Specific Objectives

- Apply AI algorithms to identify and select promising pharmacological compounds
- Optimize the design and development of new drugs using AI-based predictive models
- Use artificial intelligence to personalize drug treatments according to genetic and clinical profiles
- Implement AI in the efficient management of drug manufacturing and distribution processes

" *Don't have much time to study? The 100% online modality and the accompaniment of the best specialists in the pharmacological sector will boost your knowledge in the AI sector"*

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"*
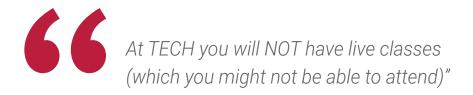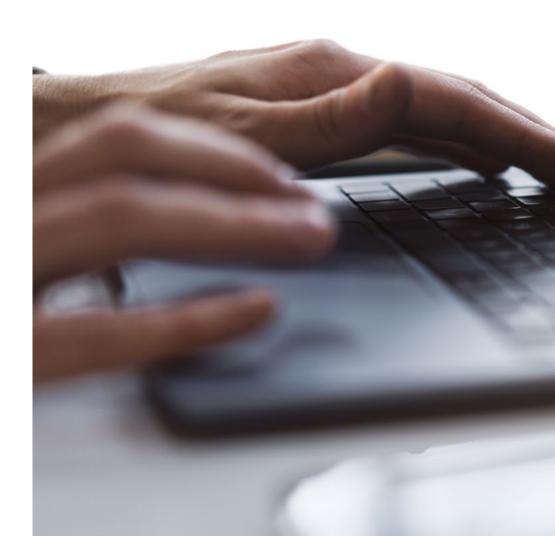
The student: the priority of all TECH programs

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.
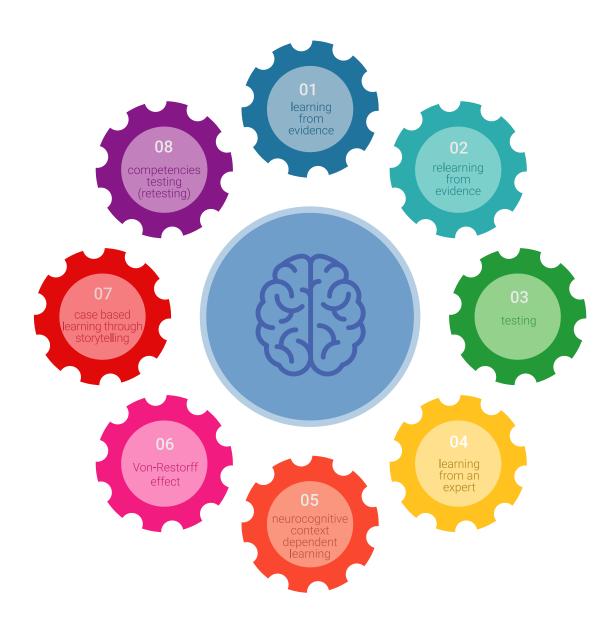
Relearning Methodology

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.

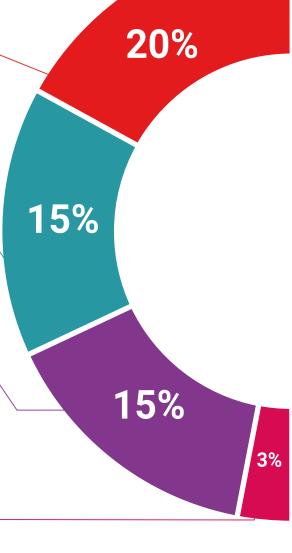### Practicing Skills and Abilities

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.

06
Teaching Staff

This Postgraduate Certificate has a faculty composed of internationally renowned experts in the areas of pharmacology, biotechnology and Artificial Intelligence. Each member is a reference in their field, with years of practical experience and cutting-edge research. In turn, they combine a solid academic background with an innovative vision, ensuring that students acquire the most current and relevant skills in the industry. Thanks to their close approach, you will not only learn from the best minds in the industry, but you will also be in direct contact with professionals who are leading the future of Pharmacy.

"

TECH's excellent teaching team will ensure you a unique academic experience, tailored to the challenges and demands of new drug development in the digital era"

Management

Dr. Peralta Martín-Palomino, Arturo

- CEO and CTO at Prometeus Global Solutions
- CTO at Korporate Technologies
- CTO at AI Shepherds GmbH
- Consultant and Strategic Business Advisor at Alliance Medical
- Director of Design and Development at DocPath
- Doctorate in Psychology from the University of Castilla La Mancha
- Doctorate in Economics, Business and Finance from the Camilo José Cela University
- Doctorate in Psychology from University of Castilla La Mancha
- Master's Degree in Executive MBA from the Isabel I University
- Master's Degree in Sales and Marketing Management from the Isabel I University
- Expert Master's Degree in Big Data by Hadoop Training
- Master's Degree in Advanced Information Technologies from the University of Castilla La Mancha
- Member of the research group SMILE

Professors

Mr. Popescu Radu, Daniel Vasile
- Independent Specialist in Pharmacology, Nutrition and Dietetics
- Freelance Producer of Didactic and Scientific Content
- Nutritionist and Community Dietitian
- Community Pharmacist
- Researcher
- Master's Degree in Nutrition and Health from the Open University of Catalonia
- Master's Degree in Psychopharmacology from the University of Valencia
- Pharmacist from the Complutense University of Madrid
- Nutritionist-Dietitian by the European University Miguel de Cervantes

Mr. Del Rey Sánchez, Alejandro
- In Charge of Implementing Programs to Improve Tactical Emergency Care
- Degree in Industrial Organization Engineering
- Certification in Big Data and Business Analytics
- Certification in Microsoft Excel Advanced, VBA, KPI and DAX
- Certification in CIS Telecommunication and Information Systems

Ms. Del Rey Sánchez, Cristina
- Talent Management Administrator at Securitas Seguridad España, S.L.
- Extracurricular Activities Center Coordinator
- Tutor and pedagogical interventions with Primary and Secondary Education students
- Postgraduate in Development, Delivery and Tutoring of e-Learning Training Actions
- Postgraduate in Early Childhood Care
- Degree in Pedagogy from the Complutense University of Madrid

Mr. Martín-Palomino Sahagún, Fernando
- Chief Technology Officer and R+D+i Director at AURA Diagnostics (medTech)
- Business Development at SARLIN
- Chief Operating Officer at Alliance Diagnostics
- Director of Innovation at Alliance Medical
- Chief Information Officer at Alliance Medical
- Field Engineer & Project Management in Digital Radiology at Kodak
- MBA from the Polytechnic University of Madrid
- Executive Master's Degree in Marketing and Sales at ESADE
- Telecommunications Engineer from the University Alfonso X El Sabio

Dr. Carrasco González, Ramón Alberto
- Head of Business Intelligence (Marketing) at the Caja General de Ahorros de Granada and Banco Mare Nostrum
- Head of Information Systems (Data Warehousing and Business Intelligence) at Caja General de Ahorros de Granada and Banco Mare Nostrum
- Computer Science and Artificial Intelligence Specialist and Researcher
- Doctorate in Artificial Intelligence from the University of Granada
- Senior Engineer in Computer Science from the University of Granada

Take the opportunity to learn about the latest advances in this field in order to apply it to your daily practice"

Certificate

The Postgraduate Certificate in Development of New Drugs with Artificial Intelligence guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate 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 **Postgraduate Certificate in Development of New Drugs with Artificial Intelligence** 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 Development of New Drugs with Artificial Intelligence**

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 Development of New Drugs with Artificial Intelligence

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

This qualification must always be accompanied by the university degree issued by the competent authority to practice professionally in each country.   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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