Postgraduate Certificate
Deep Learning
Processing Sequences

tech technological university

Postgraduate Certificate
Deep Learning
Processing Sequences

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

Website: **www.techtitute.com/us/artificial-intelligence/postgraduate-certificate/deep-learning-processing-sequences**

Index

01
Introduction

According to a survey conducted by the Spanish Foundation for Science and Technology, 32.3% of Spaniards do not have an educated opinion about Artificial Intelligence, while 15.1% are unaware of its applications. However, the truth is that this technological discipline is advancing by leaps and bounds and is increasingly present in everyday life. For example, Deep Learning is used to optimize energy use and perform environmental monitoring to detect climate changes. Precisely, this branch is in constant expansion due to its multiple benefits and advances in research. For this reason, TECH launches a fully online university program that will provide the most innovative techniques for the training of Neural Networks.

"

A 100% online Postgraduate Certificate that will provide you with the most effective methods to predict future values in a sequence of data that vary over time"

Deep Learning Processing Sequences are an essential aspect of Deep Learning. The main reasons are that these tools enable effective modeling of sequential data, capture complex temporal dependencies and enable a wide range of applications in numerous fields. In turn, these intelligent systems continuously develop algorithms that drive innovation, enabling advances ranging from personalized medicine to machine translation or even the prediction of astronomical phenomena. In this sense, their ability to learn from large amounts of data and identify complex patterns is generating new opportunities for research.

Within this framework, TECH is developing a pioneering Postgraduate Certificate in Deep Learning Processing Sequences. Aimed at professionals, researchers and entrepreneurs, this program will delve into both the types of Recurrent Neurons and the architecture of the layers. Likewise, the syllabus will provide students with the most advanced techniques for the training of Recurrent Neural Networks (highlighting Backpropagation over time). In this regard, the curriculum will delve into the most effective Evaluation Metrics to guarantee the performance of Deep Learning models. On the other hand, the program will include multiple practical applications of Convolutional Neural Networks, such as computer vision, pattern recognition or natural language processing.

To facilitate the assimilation of all these contents, TECH offers first class pedagogical tools, to which students will have access 24 hours a day. The only thing they will need to enter the Virtual Campus is an electronic device with an Internet connection, serving their own smartphone, Tabletor computer. At the same time, throughout their learning process they will have the support of a teaching staff specialized in Computer Vision. These professionals will resolve any doubts that students may have, in addition to providing them with personalized advice to ensure that they experience a quality leap in their professional career.

This **Postgraduate Certificate in Deep Learning Processing Sequences** contains the most complete and up-to-date program on the market. The most important features include:

- The development of case studies presented by experts in *Processing Deep Learning Sequences*
- The graphic, schematic and practical contents of the program provide Sports and practical information on those disciplines that are essential for professional practice
- Practical exercises where the self-assessment process can be carried out 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

Do you want to optimize your management of Gated Recurrent Units? Master this Neural Network architecture in only 6 weeks with this program"

" *An intensive university program that will increase your performance level and skills to carry out Learning Transfer efficiently"*

By studying this intensive program you will increase your performance level and teaching skills.

Thanks to the Relearning learning method, you will not invest long hours of study to memorize. You will learn in a progressive and natural way!.

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

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive 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 academic year For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

Objectives

After 6 weeks of learning, students will become true experts in Deep LearningProcessing Sequences. Therefore, professionals will have a solid understanding of aspects such as the architecture of neurons and recurrent layers. Moreover, they will acquire new skills that will enable them to apply specific techniques and algorithms for model parameter tuning. In addition, specialists will master the most effective tools for model evaluation, to correctly interpret findings and experiment with different approaches in order to optimize their performance.

You will develop new practical skills that will help you to solve challenges related to sequence processing in the framework of Deep Learning"

General Objectives

- Fundamentalize the key concepts of mathematical functions and their derivatives
- Apply these principles to deep learning algorithms to learn automatically
- Examine the key concepts of Supervised Learning and how they apply to neural network models
- Analyze the training, evaluation and analysis of neural network models
- Fundamentals of the key concepts and main applications of deep learning
- Implement and optimize neural networks with Keras
- Develop expertise in the training of deep neural networks
- Analyze the optimization and regularization mechanisms required for deep neural network training
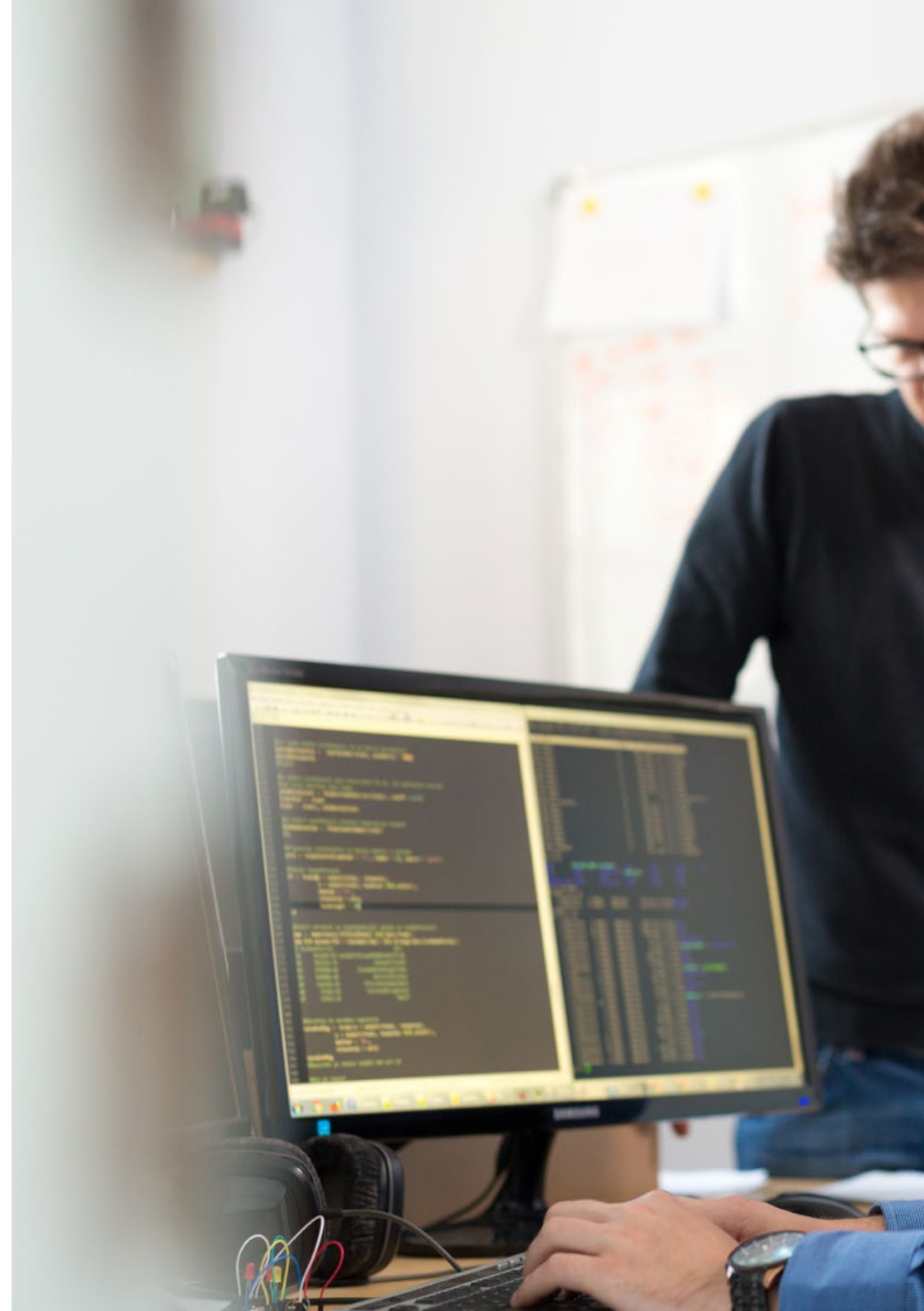
Specific Objectives

- Analyze the architecture of recurrent neurons and layers
- Examine the various training algorithms for training RNN models
- Evaluate the performance of RNN models using accuracy and sensitivity metrics
- Keep abreast of the latest trends and developments in the field of *Deep Learning* Sequence Processing

You will be able to access the Virtual Campus from any electronic device with Internet access and extract the syllabus to review it whenever you wish"

03
Course Management

In line with its maxim of providing university programs of the highest quality, TECH offers students a teaching staff made up of experts in Computer Vision and Deep Learning. These specialists have extensive professional experience in these branches of Artificial Intelligence, where they have led innovative projects to improve the performance of institutions and provide fully personalized services. In this line, they keep abreast of the latest advances in technology to achieve a praxis based on excellence. In this way, students will have access to a key educational experience for their professional development.

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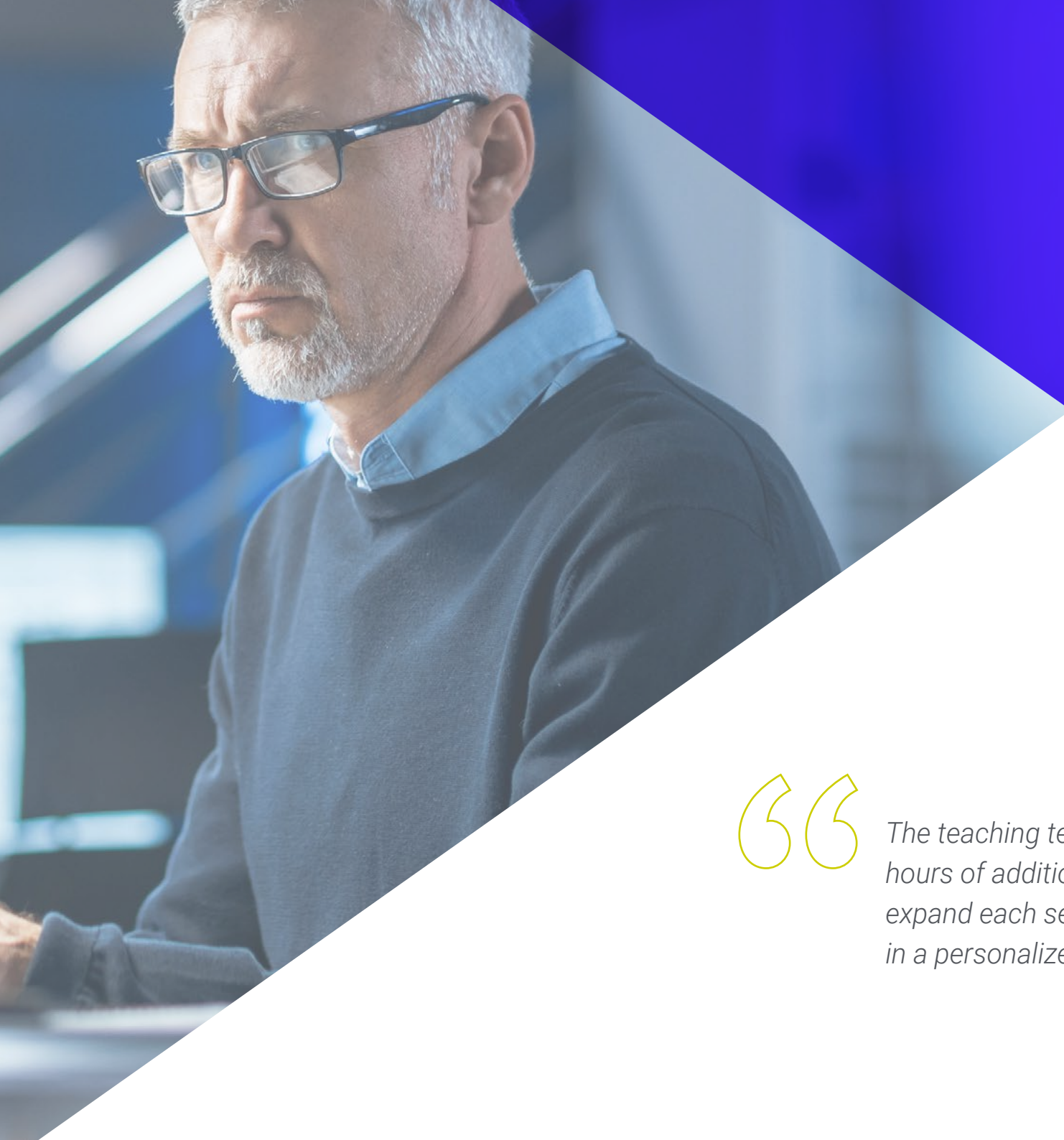
The teaching team has designed hours of additional content for you to expand each section of the syllabus in a personalized way"

Management

Mr. Gil Contreras, Armando
- Lead Big Data Scientist at Johnson Controls
- Data Scientist-Big Data at Opensistemas S.A
- Fund Auditor at Creatividad and Tecnología (CYTSA)
- Public Sector Auditor at PricewaterhouseCoopers Auditors
- Master's Degree in Data Science from the Centro Universitario de Tecnología y Arte
- MBA in International Relations and Business from the Centro de Estudios Financieros (CEF)
- Bachelor's Degree in Economics from Instituto Tecnológico de Santo Domingo

Professors

Ms. Delgado Feliz, Benedit
- Administrative Assistant and Electronic Surveillance Operator for the National Drug Control Directorate (DNCD)
- Customer Service at Cáceres y Equipos
- Claims and Customer Service at Express Parcel Services (EPS)
- Microsoft Office Specialist at the National School of Informatics (Escuela Nacional de Informática)
- Social Communicator from the Catholic University of Santo Domingo

Mr. Villar Valor, Javier
- Director and Founding Partner of Impulsa2
- Chief Operations Officer (COO) at Summa Insurance Brokers
- Director of Transformation and Operational Excellence at Johnson Controls
- Master in Professional Coaching
- Executive MBA from Emlyon Business School, France
- Master's Degree in Quality Management from EOI, Spain
- Computer Engineering from the Universidad Acción Pro-Education and Culture (UNAPEC)

Mr. Matos Rodríguez, Dionis
- Data Engineer at Wide Agency Sodexo
- Data Consultant at Tokiota
- Data Engineer at Devoteam
- BI Developer at Ibermática
- Applications Engineer at Johnson Controls
- Database Developer at Suncapital España
- Senior Web Developer at Deadlock Solutions
- QA Analyst at Metaconxept
- Master's Degree in Big Data & Analytics by EAE Business School
- Master's Degree in Systems Analysis and Design
- Bachelor's Degree in Computer Engineering from APEC University

Ms. Gil de León, María
- Co-Director of Marketing and Secretary at RAÍZ Magazine
- Copy Editor at Gauge Magazine
- Stork Magazine reader from Emerson College
- B.A. in Writing, Literature and Publishing from Emerson College

Structure and Content

The didactic materials that make up this academic itinerary are designed to provide students with a comprehensive approach to Processing Sequences in Deep Learning. To achieve this, the program will delve into essential concepts such as neurons, recurrent layers and model training. In addition, students will examine the most advanced tools for Evaluation Metrics, including cross-validation and hyperparameter tuning. As such, graduates will incorporate these tools into their practice to measure and understand the performance of models in a variety of tasks such as transforming text into audio signal sequences.

You will examine the latest scientific evidence regarding Recurrent Neural Network Training to enrich your regular praxis"

Module 1. Processing Sequences using RNN (Recurrent Neural Networks) and CNN (Convolutional Neural Networks)

1.1.   Recurrent Neurons and Layers
    1.1.1.   Types of Recurring Neurons
    1.1.2.   Architecture of a Recurrent Layer
    1.1.3.   Applications of Recurrent Layers

1.2.   Recurrent Neural Network (RNN) Training
    1.2.1.   Backpropagation over Time (BPTT)
    1.2.2.   Stochastic Downward Gradient
    1.2.3.   Regularization in RNN Training

1.3.   Evaluation of RNN Models
    1.3.1.   Evaluation Metrics
    1.3.2.   Cross Validation
    1.3.3.   Hyperparameter Tuning

1.4.   Prerenal RNNs
    1.4.1.   Prenetrated Networks
    1.4.2.   Transfer of Learning
    1.4.3.   Fine Tuning

1.5.   Forecasting a Time Series
    1.5.1.   Statistical Models for Forecasting
    1.5.2.   Time Series Models
    1.5.3.   Models based on Neural Networks

1.6.   Interpretation of Time Series Analysis Results
    1.6.1.   Main Component Analysis
    1.6.2.   Cluster Analysis
    1.6.3.   Correlation Analysis

1.7.   Handling of Long Sequences
    1.7.1.   Long Short-Term Memory (LSTM)
    1.7.2.   Gated Recurrent Units (GRU)
    1.7.3.   1D Convolutionals

You will have a library of top-quality multimedia resources that will enhance your knowledge about Deep Learning"

Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning.**

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.
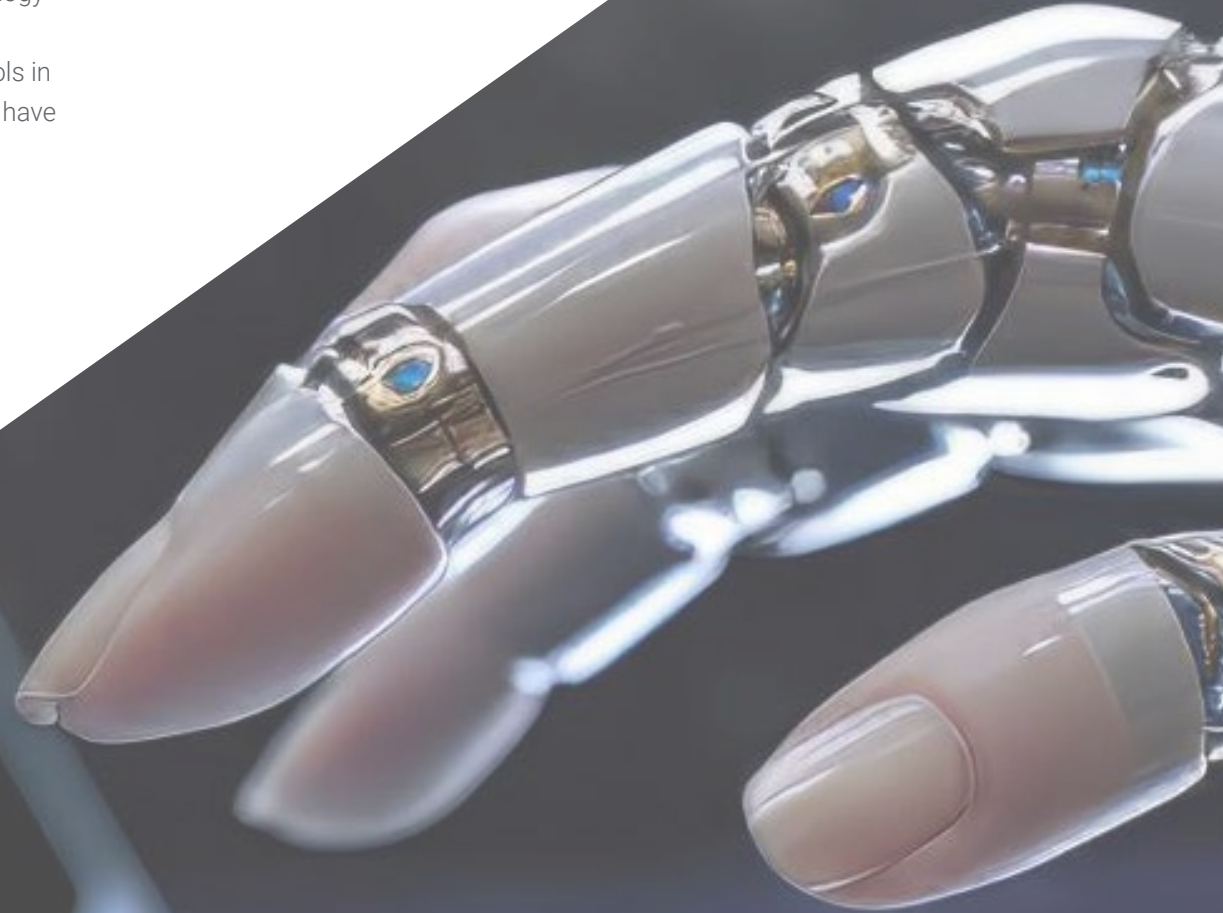
Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

Case Study to contextualize all content

Our program offers a revolutionary approach to developing skills and knowledge. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

" *At TECH, you will experience a learning methodology that is shaking the foundations of traditional universities around the world"*

You will have access to a learning system based on repetition, with natural and progressive teaching throughout the entire syllabus.

The student will learn to solve complex situations in real business environments through collaborative activities and real cases.

A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch, which presents the most demanding challenges and decisions in this field, both nationally and internationally. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and professional reality is taken into account.

❝

Our program prepares you to face new challenges in uncertain environments and achieve success in your career"

The case method has been the most widely used learning system among the world's leading Information Technology schools for as long as they have existed. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question that you are presented with in the case method, an action-oriented learning method. Throughout the course, students will be presented with multiple real cases. They will have to combine all their knowledge and research, and argue and defend their ideas and decisions.

Relearning Methodology

TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

We enhance the Case Study with the best 100% online teaching method: Relearning.

In 2019, we obtained the best learning results of all online universities in the world.

At TECH you will learn using a cutting-edge methodology designed to train the executives of the future. This method, at the forefront of international teaching, is called Relearning.

Our university is the only one in the world authorized to employ this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.

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)

In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically. This methodology has trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, and financial markets and instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

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

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images and memories, but we know that the place and context where we have learned something is fundamental for us to be able to remember it and store it in the hippocampus, to retain it in our long-term memory.

In this way, and in what is called neurocognitive context-dependent e-learning, the different elements in our program are connected to the context where the individual carries out their professional activity.

This program offers the best educational material, prepared with professionals in mind:

Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.

Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

Practising Skills and Abilities

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

Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.

30%

10%

8%

20%

25%

4%

3%

Case Studies

Students will complete a selection of the best case studies chosen specifically for this program. Cases that are presented, analyzed, and supervised by the best specialists in the world.

Interactive Summaries

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".

Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.

06

Certificate

The Postgraduate Certificate in Processing Sequences in Deep Learning guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.

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

This **Postgraduate Certificate in Processing Sequences in Deep Learning** contains the most complete and up-to-date program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Certificate** issued by **TECH Technological University** via tracked delivery*.

The diploma issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Certificate, and meets the requirements commonly demanded by labor exchanges, competitive examinations and professional career evaluation committees.

Title: **Postgraduate Certificate in Deep Learning Processing Sequences**

Official Nº of Hours: **150 h.**

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Awards the following

DIPLOMA

to

Mr./Ms. _____, with identification number _____.

For having passed and accredited the following program

POSTGRADUATE CERTIFICATE

in

Deep Learning Processing Sequences

This is a qualification awarded by this University, equivalent to 150 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH is a Private Institution of Higher Education recognized by the Ministry of Public Education as of June 28, 2018.

June 17, 2020

Tere Guevara Navarro
Dean

Unique TECH Code: AFWORD23S   techtitute.com/certificates

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