Postgraduate Diploma
Deep Learning Applications

tech technological university

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Deep Learning Applications

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

Website: **www.techtitute.com/in/artificial-intelligence/postgraduate-diploma/postgraduate-diploma-deep-learning-applications**

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Introduction

In an era characterized by the constant evolution of digital innovation, Artificial Intelligence is emerging as a key pillar of the future. In this sense, Deep Learning constitutes one of its fundamental pillars: these Neural Networks attempt to emulate the behavior of the human brain to learn from large amounts of data. In this way, they drive services that improve automation, thus performing complex analytical tasks. This technology is applied in a variety of everyday products, such as smartphones, autonomous vehicles and voice assistants. Given its growing importance in society, TECH has designed a 100% online university program that will delve into the processing sequences using Recurrent and Convolutional Neural Networks.

A 100% online program that provides you with the most effective Deep Learning techniques to solve real problems and develop innovative solutions"

Deep Learning has a wide diversity of fields such as Robotics, Computer Vision and Natural Language Processing. Currently, the implementation of these advanced techniques is being increasingly demanded in different fields of work. Among them, the Marketing sector stands out, since Deep Learning tools provide these companies with multiple benefits. For example, they serve to analyze large sets of customer data to identify more precise audience segments. In this way, companies are able to personalize their strategies and messages in order to meet the specific needs of each audience.

Given this reality, TECH creates a Postgraduate Diploma that will provide experts with a comprehensive knowledge on Deep Learning Applications. The curriculum is designed to equip students with the most cutting-edge and effective tools for training Neural Networks. To this end, the curriculum will delve into both neurons and recurrent layer architecture. The program will also delve intoTransformers models for natural language processing, enabling graduates to achieve superior performance in a variety of tasks such as fluent text generation.

To achieve this update, TECH provides multiple pedagogical resources based on multimedia pills, case study simulations and specialized readings for students to enjoy dynamic learning. In addition, students will not have to invest many hours of study, since the *Relearning* method will help them to consolidate the most important concepts in a much simpler way. Therefore, professionals are faced with a quality academic option that is perfectly compatible with their daily responsibilities, as they can individually plan their schedules and evaluation chronograms. The only thing they will need to access the Virtual Campus is an electronic device with Internet access, and they can even use their cell phones.

This **Postgraduate Diploma in Deep Learning Applications** 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 Deep Learning Applications
- The graphical, schematic and practical contents with which it is conceived gather technological 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

You will master Hugging Face's Transformers tool for learning transfer. And in just 6 months with this Postgraduate Diploma!"

"You'll delve into sentiment analysis with Deep Learning algorithms to monitor social networks"

You will handle the construction of coding architectures and be able to automatically extract meaningful features from data.

TECH's revolutionary Relearning methodology will provide you with the flexibility to organize your study pace to suit your circumstances.

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.
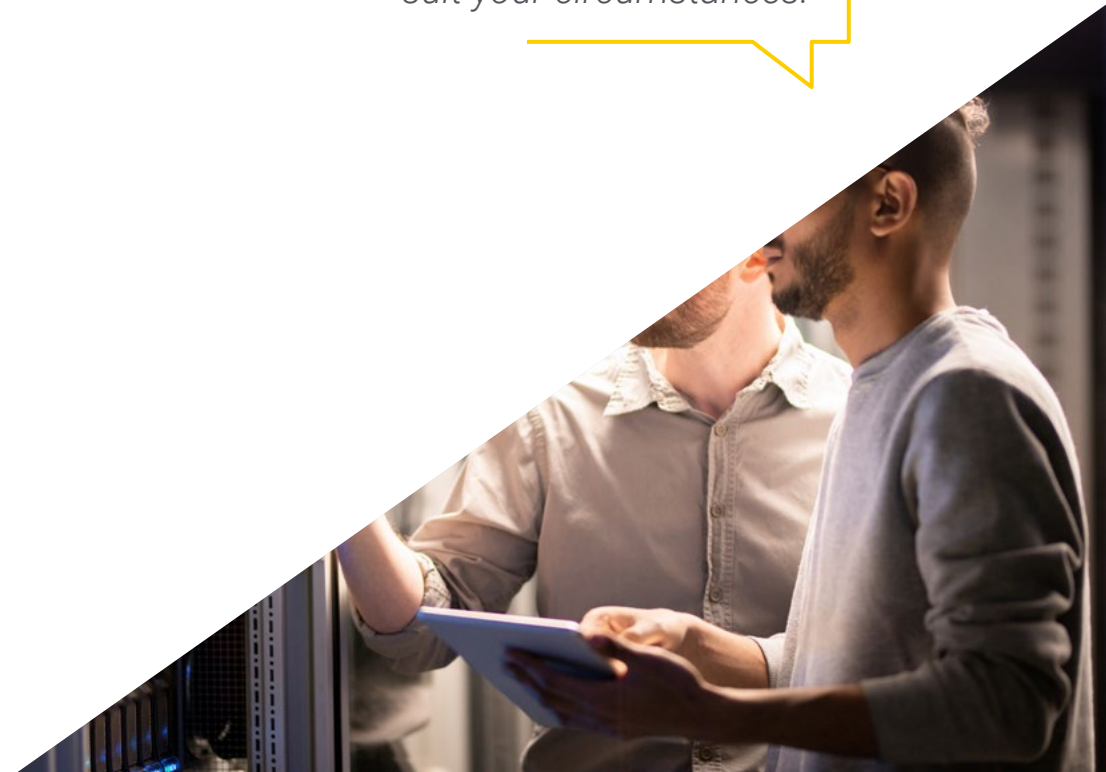
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Objectives

Upon completion of this university program, graduates will raise their professional horizons by becoming references in Deep Learning. By mastering the architecture of recurrent neurons and layers, students will apply these principles to Deep Learning algorithms to make machines learn automatically. In addition, they will be able to perform a practical application of natural language processing with Recurrent Neural Networks. In addition, they will implement advanced principal component analysis techniques to their projects through an incomplete linear automatic coder.

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You will acquire Deep Learning skills highly demanded to distinguish yourself in an increasingly global technology sector"

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

With TECH you will be up to date with the latest technological advances and trends in the field of Neural Networks"
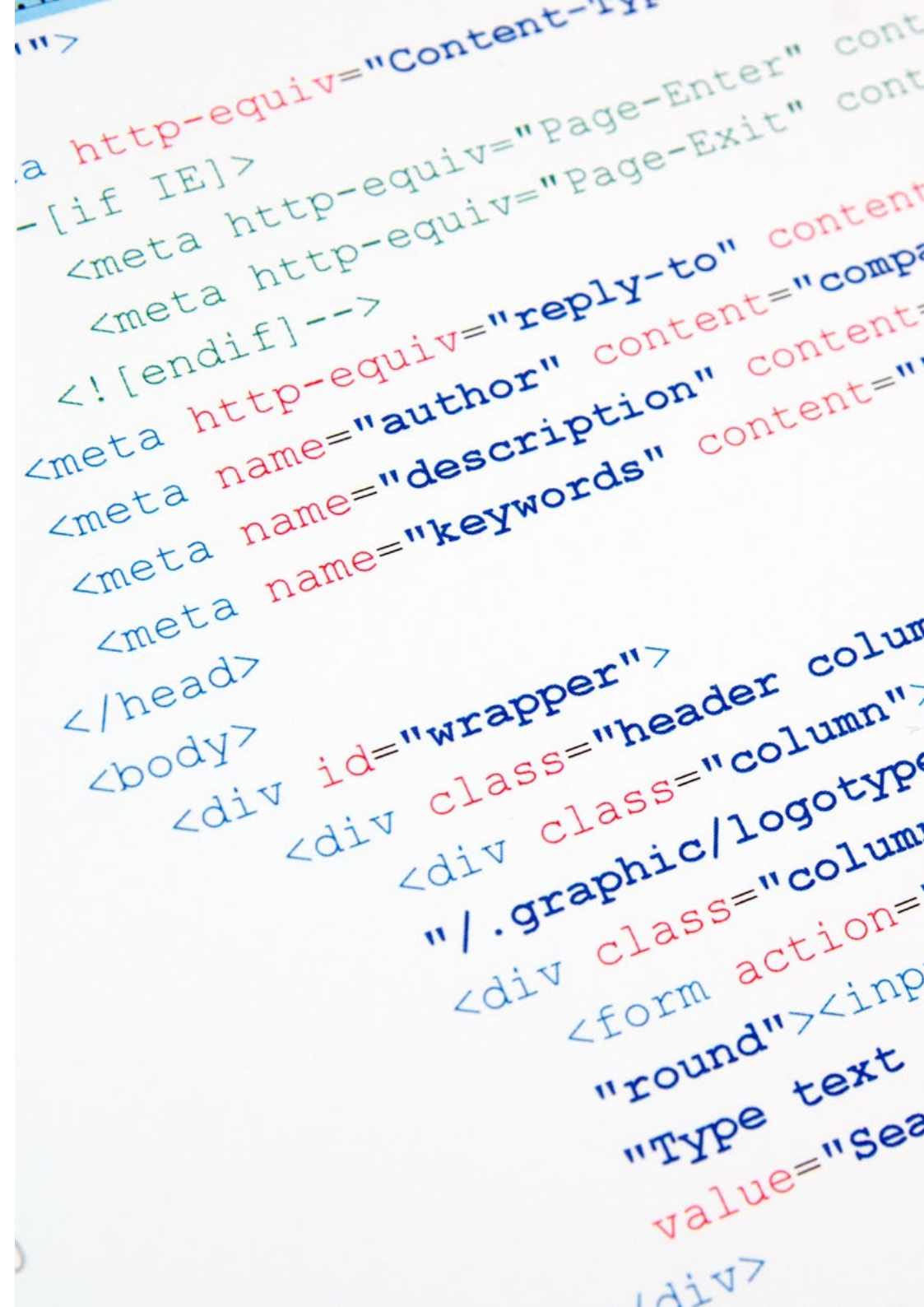
Specific Objectives

Module 1. Processing sequences using RNN and CNN
- Analyze the architecture of recurrent neurons and layers
- Examine the various training algorithms for training RNN models

Module 2. NLP Natural Language Processing with RNN and Attention
- Train an encoder-decoder network to perform neural machine translation
- Develop a practical application of natural language processing with RNN and attention

Module 3. Autoencoders, GANs, and Diffusion Models
- Implementing PCA techniques with an incomplete linear autoencoder
- Use convolutional and variational autoencoders to improve the performance of autoencoders

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Course Management

To deliver this program, TECH has assembled a large team of experts who stand out for their professional experience in the field of Deep Learning. In this same line, they have a comprehensive approach to Computer Vision and Deep Learning, which has allowed them to develop highly innovative solutions for recognized technological institutions. This is a guarantee for the students, since they will have the personalized guidance of these experts throughout their learning process. In this way, the graduates of this program will accumulate practical skills and theoretical knowledge in accordance with the latest trends in this specialization.

You will have the support of the best Deep Learning professionals to specialize with all the guarantees of success"

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

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Structure and Content

The Postgraduate Diploma in *Deep Learning* Applications will focus on processing sequences using both Recurrent and Convolutional Neural Networks. Students will examine the architecture of the layers, taking into account their applications and *backpropagation* over time. In tune with this, they will delve into natural language processing to generate texts and translations in an automated way. Likewise, the didactic contents will also delve into diffusion models (including *autoencoders* and generative adversarial networks). In this way, graduates will produce realistic data samples and model probability distributions effectively.

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You will raise your professional potential in the field of Computer Vision thanks to this 100% online Postgraduate Diploma"

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.   Pre-trained 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

Module 2. Natural Language Processing (NLP) with Natural Recurrent Networks (NRN) and Attention

Module 3. Autoencoders, GANs, and Diffusion Models

This will provide key education to advance in your career. Enroll now and notice immediate career advancement"

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.
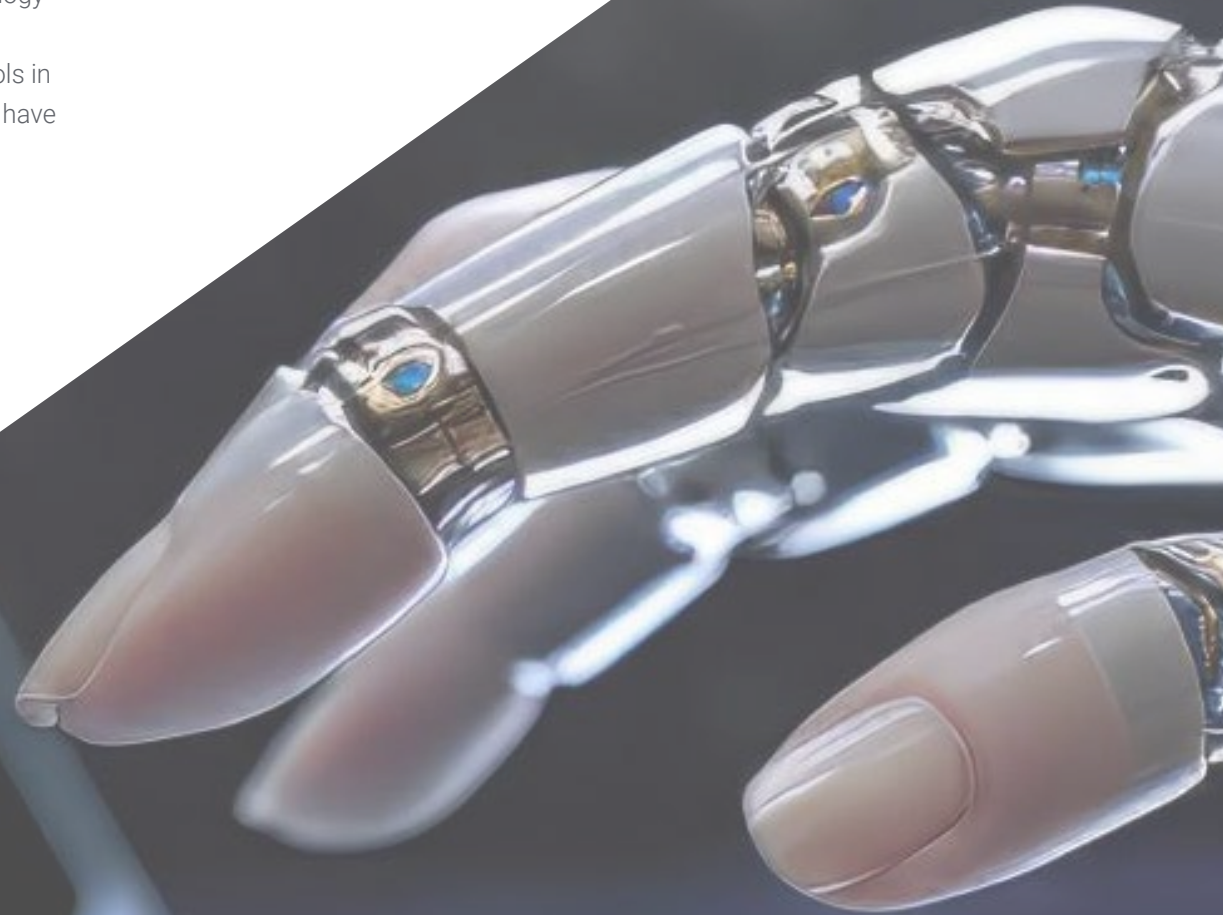
Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

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%
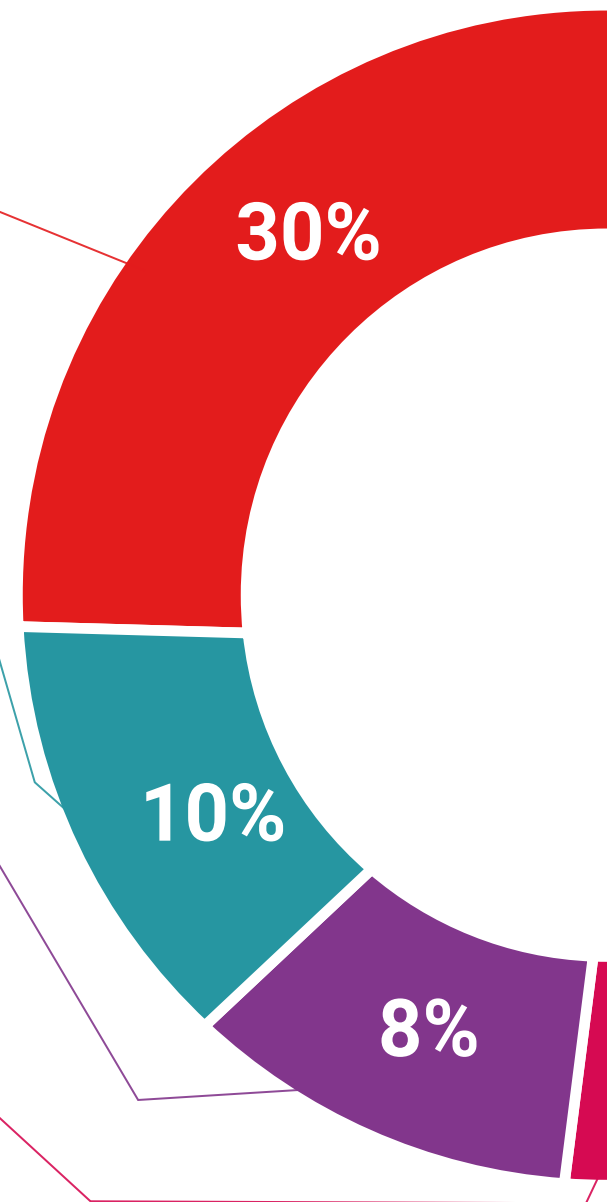
Case Studies

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.

Certificate

The Postgraduate Diploma in Deep Learning Applications guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma 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 Diploma in Deep Learning Applications** 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 Diploma** issued by **TECH Technological University** via tracked delivery*.

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

Title: **Postgraduate Diploma in Deep Learning Applications**

Official Nº of Hours: **450 h.**

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Awards the following
CERTIFICATE
to
Mr./Ms. _____, with identification number_____.
For having passed and accredited the following program

POSTGRADUATE DIPLOMA
in

Deep Learning Applications

This is a qualification awarded by this University, equivalent to 450 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

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

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