

# Postgraduate Certificate

## Linguistic Models and Artificial Intelligence Application



## Postgraduate Certificate Linguistic Models and Artificial Intelligence Application

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Technological University
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtitute.com/us/artificial-intelligence/postgraduate-certificate/linguistic-models-artificial-intelligence-application](http://www.techtitute.com/us/artificial-intelligence/postgraduate-certificate/linguistic-models-artificial-intelligence-application)

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# 01

# Introduction

Advanced linguistic models, such as GPT-4, have demonstrated rapid progress in the application of Artificial Intelligence in a wide range of fields, from content generation to the automation of complex tasks. These systems can process and generate text in multiple languages with increasing accuracy, approaching human fluency. In fact, they have been integrated into machine translation tools such as DeepL and Google Translate, improving not only the quality of translations, but also their ability to understand cultural and contextual nuances. In this context, TECH has developed a comprehensive online program that is ideally suited to the work and personal schedules of graduates, always using the innovative methodology known as Relearning.





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*With this 100% online Postgraduate Certificate, you will deepen your knowledge of traditional and modern linguistic models, as well as their application in Natural Language Processing (NLP)”*

Artificial Intelligence-based linguistic models are revolutionizing the field of translation and interpreting. These systems, trained on large volumes of multilingual data, make it possible to generate machine translations with unprecedented accuracy, reducing language barriers in real time.

This is how this Postgraduate Certificate was created, in which professionals will acquire a solid knowledge of the classical approaches to linguistics, including rule-based and probabilistic models, as well as the most advanced AI-based processing techniques, such as deep learning. This theoretical framework will provide a deep understanding of how languages are structured and processed, which is essential for effective professional practice.

It will also implement probabilistic models that allow predicting linguistic structures and patterns based on previous data, and rule-based models that are based on predefined grammatical and syntactic rules. In addition, they will be trained in the use of deep learning techniques, which mimic the neural networks of the human brain, to address complex machine translation and real-time language recognition problems.

Finally, experts will be prepared to apply this knowledge in both written translation and interpreting, benefiting from the use of advanced Artificial Intelligence tools to improve accuracy, fluency and efficiency in both tasks. With training that combines linguistic theory and cutting-edge technology, they will be able to face today's translation and interpreting challenges with a modern and innovative perspective.

Therefore, TECH has created a 100% online program, accessible through any electronic device with an Internet connection. This avoids inconveniences such as going to a physical center and the need to follow a strict schedule. Additionally, it is based on the revolutionary Relearning methodology, which focuses on the repetition of essential concepts to facilitate an optimal and organic assimilation of the contents.

This **Postgraduate Certificate in Linguistic Models and Artificial Intelligence**

**Application** 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 Artificial Intelligence applied to Translation and Interpreting
- ♦ The graphic, schematic, and practical contents with which they are created, provide 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
- ♦ 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 develop practical skills in the use of Artificial Intelligence-based tools, enhancing your competitiveness in machine translation and interpreting. What are you waiting to enroll?"*

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*You will gain a solid theoretical foundation on linguistic models, equipping you with the practical skills needed to implement innovative solutions in the field of translation and interpreting”*

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 in the field of educational coaching with extensive experience.

*You will acquire a solid knowledge of the various linguistic models, ranging from classical theories to the most contemporary ones based on Artificial Intelligence. With all TECH's quality guarantees!*

*You will become familiar with probabilistic modeling techniques and rule-based models, as well as deep learning methodologies, through the best teaching materials, at the forefront of technology and education.*





# 02 Objectives

The main objective of the university program will be to provide graduates with a solid understanding of the different linguistic approaches, from classical models to the most advanced ones based on Artificial Intelligence. Therefore, they will develop skills to apply probabilistic, rule-based and deep learning models to Natural Language Processing (NLP) tasks, optimizing their ability to perform more accurate and efficient translations. You will also acquire skills to integrate AI tools into your professional practice, improving efficiency in translation and interpreting processes in a globalized and technologically advanced context.





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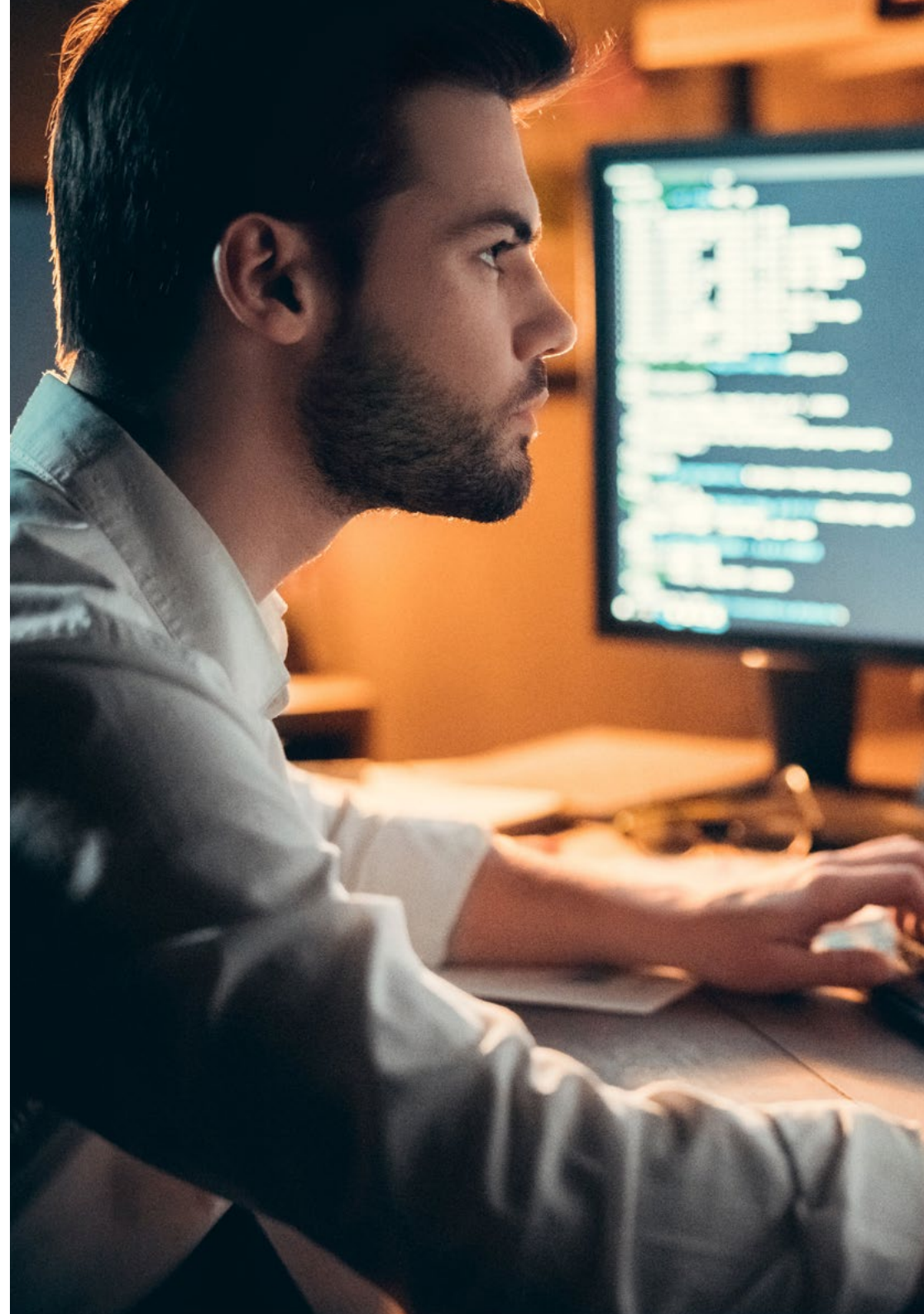
*You will be able to integrate linguistic models into your daily work, improving quality and efficiency in the production and comprehension of multilingual texts, with the support of the revolutionary Relearning methodology”*



## General Objectives

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- ♦ Understand classical and modern linguistic models and their application in Artificial Intelligence
- ♦ Acquire skills to use and optimize AI tools in real-time translation, ensuring accuracy and fluency in multilingual contexts
- ♦ Become skilled in the use of the main AI-assisted translation platforms and tools, integrating them effectively into the professional workflow
- ♦ Equip yourself with the necessary skills to lead projects and teams in the implementation of AI solutions in the field of translation and interpreting







## Specific Objectives

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- ♦ Acquire a solid knowledge of the different linguistic models, from classical to AI-based, and their relevance in translation and interpreting
- ♦ Develop the skills to apply probabilistic, rule-based and deep learning models in Natural Language Processing (NLP) tasks



*You will broaden your technical skills, positioning yourself as a professional capable of leading innovations in an increasingly demanding and globalized field, thanks to an extensive library of multimedia resources"*



03

# Course Management

The teachers are experts with a solid background in both linguistics and technology. In fact, they have extensive knowledge in areas such as Natural Language Processing (NLP), deep learning and probabilistic models, and have worked on innovative projects that integrate Artificial Intelligence with the study of languages. In addition, they have applied this knowledge in the professional field, either in the translation industry or in the development of advanced technological tools for interpreting.



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*The practical and academic approach of the teachers will allow them to offer up-to-date and relevant training, facilitating learning through real cases and the use of the latest and most innovative technologies”*

## Management



### Dr. Peralta Martín-Palomino, Arturo

- CEO and CTO at Prometheus 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
- PhD in Psychology from the University of Castilla La Mancha
- PhD in Economics, Business and Finance from the Camilo José Cela University
- PhD 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, 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: SMILE Research Group



## Professors

### Ms. Martínez Cerrato, Yésica

- ♦ Responsible for Technical Training at Securitas Seguridad España
- ♦ Education, Business and Marketing Specialist
- ♦ Product Manager in Electronic Security at Securitas Seguridad España
- ♦ Business Intelligence Analyst at Ricopia Technologies
- ♦ Computer Technician and Responsible for OTEC computer classrooms at the University of Alcalá de Henares
- ♦ Collaborator in the ASALUMA Association
- ♦ Degree in Electronic Communications Engineering at the Polytechnic School, University of Alcalá de Henares

### Ms. Del Rey Sánchez, Cristina

- ♦ Talent Management Administrative Officer at Securitas Seguridad España, S.L.
- ♦ Extracurricular Activities Center Coordinator
- ♦ Support classes 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

# 04

## Structure and Content

The contents of this academic program will include the different linguistic models, from classical approaches to innovations driven by Artificial Intelligence, focusing on their application in Natural Language Processing (NLP). In addition, it will delve into the study of probabilistic models, rule-based methods and deep learning techniques, which will allow professionals to develop skills to implement these tools in tasks such as machine translation and real-time interpretation.





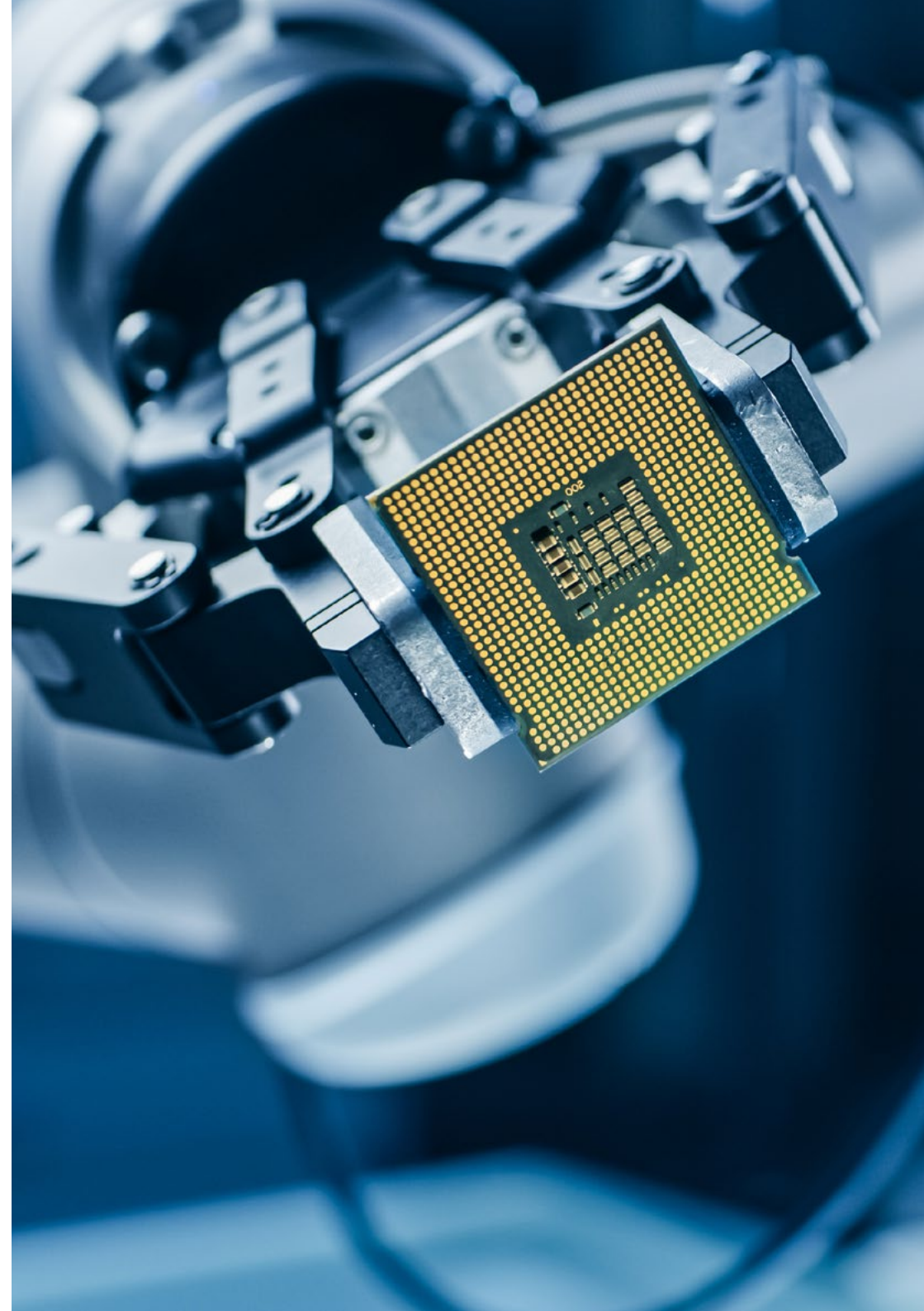
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*The content of the Postgraduate Certificate in Linguistic Modeling and Artificial Intelligence Application will cover a wide range of topics that integrate linguistic theory with the practice of modern technology”*



## Module 1. Linguistic Models and AI Application

- 1.1. Classical Models of Linguistics and their Relevance to AI
  - 1.1.1. Generative and Transformational Grammar
  - 1.1.2. Structural Linguistic Theory
  - 1.1.3. Formal Grammar Theory
  - 1.1.4. Applications of Classical Models in AI
- 1.2. Probabilistic Models in Linguistics and Their Application in AI
  - 1.2.1. Hidden Markov Models (HMM)
  - 1.2.2. Statistical Language Models
  - 1.2.3. Supervised and Unsupervised Learning Algorithms
  - 1.2.4. Applications in Speech Recognition and Text Processing
- 1.3. Rule-Based Models and Their Implementation in AI. GPT
  - 1.3.1. Formal Grammars and Rule Systems
  - 1.3.2. Knowledge Representation and Computational Logic
  - 1.3.3. Expert Systems and Inference Engines
  - 1.3.4. Applications in Dialog Systems and Virtual Assistants
- 1.4. Deep Learning Models in Linguistics and Their Use in AI
  - 1.4.1. Convolutional Neural Networks for Text Processing
  - 1.4.2. Recurrent Neural Networks and LSTM for Sequence Modeling
  - 1.4.3. Attention Models and Transformers. APERTIUM
  - 1.4.4. Applications in Machine Translation, Text Generation and Sentiment Analysis.
- 1.5. Distributed Language Representations and Their Impact on AI
  - 1.5.1. Word Embeddings and Vector Space Models
  - 1.5.2. Distributed Representations of Sentences and Documents
  - 1.5.3. Bag-of-Words Models and Continuous Language Models
  - 1.5.4. Applications in Information Retrieval, Document Clustering and Content Recommendation
- 1.6. Machine Translation Models and Their Evolution in AI. Lilt
  - 1.6.1. Statistical and Rule-Based Translation Models
  - 1.6.2. Advances in Neural Machine Translation
  - 1.6.3. Hybrid Approaches and Multilingual Models
  - 1.6.4. Applications in Online Translation and Content Localization Services



- 1.7. Sentiment Analysis Models and Their Usefulness in AI
  - 1.7.1. Sentiment Classification Methods
  - 1.7.2. Detection of Emotions in Text
  - 1.7.3. Analysis of User Opinions and Comments
  - 1.7.4. Applications in Social Networks, Analysis of Product Opinions and Customer Service
- 1.8. Language Generation Models and Their Application in AI. TransPerfect Globalink
  - 1.8.1. Autoregressive Text Generation Models
  - 1.8.2. Conditioned and Controlled Text Generation
  - 1.8.3. GPT-Based Natural Language Generation Models
  - 1.8.4. Applications in Automatic Typing, Text Summarization, and Intelligent Conversation
- 1.9. Speech Recognition Models and Their Integration in AI
  - 1.9.1. Audio Feature Extraction Methods
  - 1.9.2. Speech Recognition Models Based on Neural Networks
  - 1.9.3. Improvements in Speech Recognition Accuracy and Robustness
  - 1.9.4. Applications in Virtual Assistants, Transcription Systems and Speech-based Device Control
- 1.10. Challenges and Future of Linguistic Models in AI
  - 1.10.1. Challenges in Natural Language Understanding
  - 1.10.2. Limitations and Biases in Current Linguistic Fashion
  - 1.10.3. Research and Future Trends in AI Linguistic Modeling
  - 1.10.4. Impact on Future Applications such as General Artificial Intelligence (AGI) and Human Language Understanding. SmartCAT

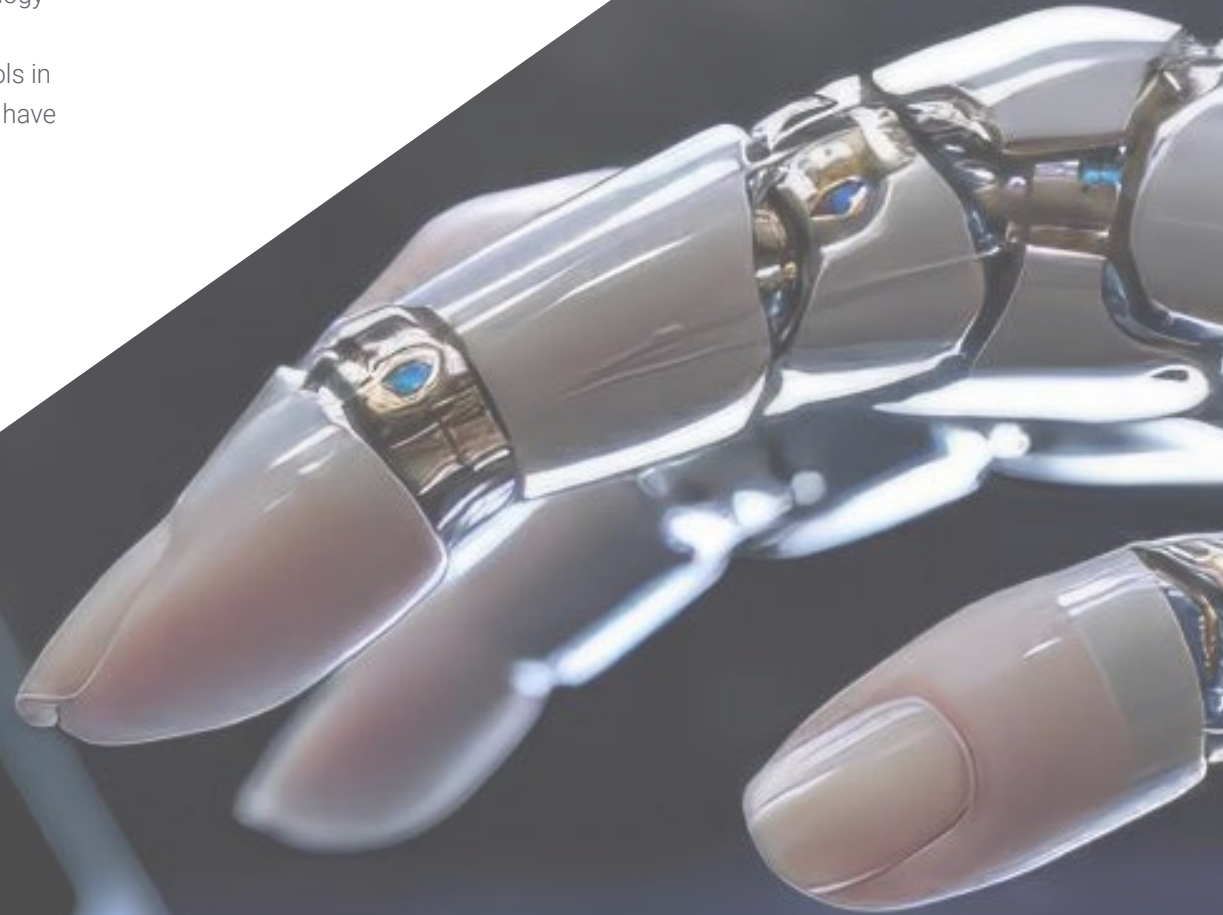


*You will address the critical evaluation of emerging technologies in the field of translation and interpreting, preparing you to meet the challenges and opportunities presented by today's multilingual environment”*

# 05 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.







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*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.

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*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.



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.



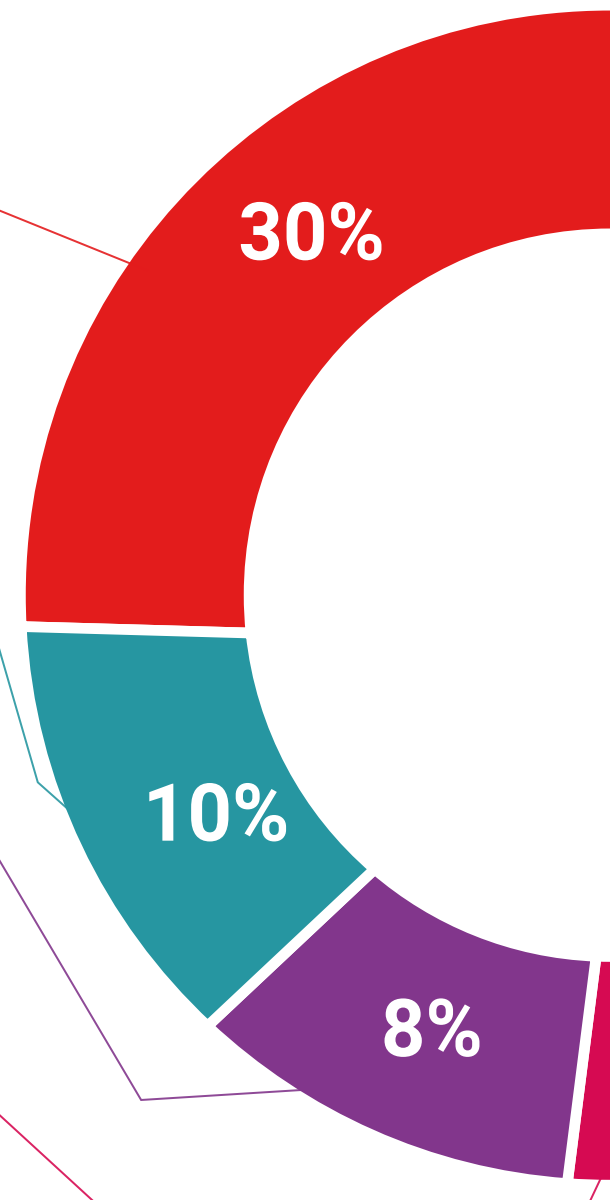
#### Practising Skills and Abilities

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.

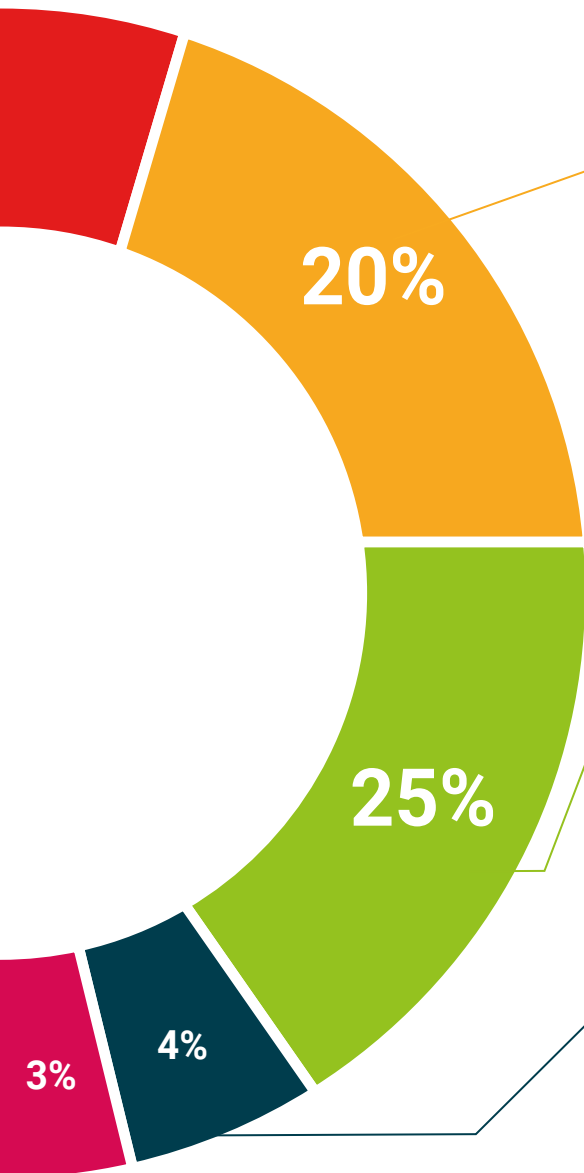


#### Additional Reading

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.





**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 Linguistic Models and Artificial Intelligence Application guarantees, in addition to the most rigorous and up to date education, access to a Postgraduate Certificate issued by TECH Technological University.



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



This **Postgraduate Certificate in Linguistic Models and Artificial Intelligence Application** contains the most complete and up-to-date scientific 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 Linguistic Models and Artificial Intelligence Application**

Modality: **online**

Duration: **6 weeks**



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



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