Postgraduate Certificate

Simulation and Predictive Modeling with Artificial Intelligence

tech technological university

Postgraduate Certificate
Simulation and Predictive Modeling with Artificial Intelligence

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

Website: **www.techtitute.com/us/engineering/postgraduate-certificate/simulation-predictive-modeling-artificial-intelligence**

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01
Introduction

Simulation and Predictive Modeling with Artificial Intelligence are tools for analyzing and anticipating the behavior of complex systems in various fields. Through the use of historical data and algorithms, it is possible to create virtual models that mimic real situations, allowing to predict future results with high accuracy. These approaches not only improve decision making in sectors such as Industry, Medicine and Finance, but also optimize processes, reduce costs and minimize risks. In this context, TECH has created a comprehensive 100% online program, offering engineering professionals the flexibility to adjust it to their work and personal schedules. In addition, it incorporates the innovative methodology known as Relearning, a pioneer in this institution.

Get to know in depth this 100% online university program, which will ensure you a deep knowledge about predictive modeling for energy efficiency with the help of Artificial Intelligence"

Simulation and Predictive Modeling assisted by Artificial Intelligence prove to be crucial for engineers, as they allow them to recreate complex systems and predict their behavior under different conditions. In fact, through the integration of historical data and advanced algorithms, these models not only optimize industrial processes, but also anticipate failures and improve operational efficiency.

This is how this Postgraduate Certificate was created, which will cover advanced simulation techniques with MATLAB, specifically applied to the architectural field. In addition, some key tools will be addressed to perform accurate simulations in architectural projects, integrating predictive models and analysis of large volumes of data. Case studies will also be presented that demonstrate how MATLAB has been essential for simulating various variables in architecture.

The use of ANSYS for advanced structural simulations will also be discussed. This tool will allow engineers to accurately assess the safety and durability of architectural structures through predictive modeling. Projects in which ANSYS has been instrumental in improving the structural performance of buildings will be explored, providing a clear view of how these simulations optimize both planning and execution in high-performance architecture.

Finally, the modeling of space use and human dynamics with AnyLogic, applying Artificial Intelligence to improve efficiency in urban and architectural environments, will be analyzed. In this sense, case studies will be presented to illustrate how these simulations influence urban planning, contributing to the creation of more efficient and functional cities.

In this way, the program will be offered 100% online, with no time restrictions. Therefore, professionals will be able to access the didactic materials in a flexible manner, adapting them to their availability at any time of the day. Likewise, to facilitate the understanding of the contents, TECH incorporates its pioneering Relearning system, designed to improve the assimilation of theoretical knowledge and the development of practical skills in a more efficient way.

This **Postgraduate Certificate in Simulation and Predictive Modeling with Artificial Intelligence** 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 Architecture
- The graphic, schematic and eminently practical contents with which it is conceived gather scientific and practical information on those disciplines that are indispensable for professional practice
- Practical exercises where 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

Enroll now in this Postgraduate Certificate and delve into predictive modeling for the planning and design of urban spaces, always with the support of the revolutionary Relearning methodology"

" *Prepare yourself in the best online university in the world, according to Forbes, which will provide you with an exhaustive and updated program in the integration of predictive models to evaluate the safety of architectural projects"*

Complete your professional career by delving into real projects that will show you how Simulation and Predictive Modeling with Artificial Intelligence contribute to ecological sustainability.

Learn about the new emerging trends in technologies for architectural practice, through the best teaching materials, at the forefront of technology and academia.

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.

02
Objectives

The main purpose of this program is to provide engineers with the most outstanding skills in the area of urban and architectural planning, integrating techniques that anticipate the efficiency of spaces. Therefore, the objectives of this Postgraduate Certificate are designed for professionals to optimize their working career, increasing their productivity, without compromising quality, and reducing the time needed to complete their tasks. In this way, they will be able to manage more projects or have more time for other responsibilities, which makes the completion of this program a great advantage.

"

Familiarize yourself with the objectives of this program and analyze different case studies that demonstrate the improvement of efficiency in construction, thanks to advanced simulations by Artificial Intelligence"

General Objectives

- Understand the theoretical foundations of Artificial Intelligence
- Study the different types of data and understand the data lifecycle
- Evaluate the crucial role of data in the development and implementation of AI solutions
- Delve into algorithms and complexity to solve specific problems
- Explore the theoretical basis of neural networks for Deep Learning development
- Explore bio-inspired computing and its relevance in the development of intelligent systems
- Manage advanced Artificial Intelligence tools to optimize architectural processes such as parametric design
- Apply Generative Modeling techniques to maximize efficiency in infrastructure planning and improve the energy performance of buildings

Specific Objectives

- Employ programs such as TensorFlow, MATLAB or ANSYS to perform simulations that anticipate structural and environmental behavior in architectural projects
- Implement predictive modeling techniques to optimize urban planning and space management, using AI to improve accuracy and efficiency in strategic decision making

You will master advanced simulation programs, such as MATLAB, to carry out successful architectural simulations that prevent inefficient sustainable projects. With all the TECH quality guarantees!"

03
Course Management

To carry out the teaching of this Postgraduate Certificate in Simulation and Predictive Modeling with Artificial Intelligence, we have made available to the engineer the best knowledge provided by the best teachers, specialists in the field, who will share their best techniques and tricks when it comes to streamline architectural projects with programs assisted by Artificial Intelligence. In this way, special emphasis will be placed on the use of digital tools such as MATLAB, ANSYS and AnyLogic, which significantly improve the simulation process.

Leading specialists will share with you their knowledge and real experiences, to support you in improving your professional performance in the field of architectural sustainability"

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
- 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

Dr. Carrasco Aguilar, Álvaro

- Sales & Marketing Coordinator at LionLingo
- Researcher in Information Technology Management
- PhD in Social and Health Research: Technical and Economic Evaluation of Technologies, Interventions and Policies Applied to Health Improvement from the University of Castilla La Mancha
- Master's Degree in Social and Health Research from the University of Castilla La Mancha
- Degree in Political Science and Administration at the University of Granada
- Award for "Best Scientific Article for Technological Innovation for the Efficiency of Health Expenditure"
- Regular speaker at international scientific congresses

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

04

Structure and Content

With this program, the professional will be specialized to perform all tasks and face any work challenge that arises, mastering the most effective tools. Likewise, its approach will be divided into two variables. In the first, they will delve into the theoretical foundations, both of simulations that anticipate the design of sustainable spaces, as well as the main components of Artificial Intelligence. Secondly, graduates will be immersed in real examples and case studies in which strategies for the improvement of architectural projects have been implemented.

"

This complete academic itinerary will offer training from a theoretical perspective, but also from a practical one, analyzing real case studies on ecological urban designs"

Module 1. Simulation and Predictive Modeling with Artificial Intelligence

1.1. Advanced Simulation Techniques with MATLAB in Architecture

    1.1.1. Using MATLAB for Advanced Architectural Simulations

    1.1.2. Integrating Predictive Modeling and Big Data Analytics

    1.1.3. Case Studies Where MATLAB Has Been Fundamental in Architectural Simulation

1.2. Advanced Structural Analysis with ANSYS

    1.2.1. Implementing ANSYS for Advanced Structural Simulations in Architectural Projects

    1.2.2. Integrating Predictive Models to Evaluate Structural Safety and Durability

    1.2.3. Projects Highlighting the Use of Structural Simulations in High Performance Architecture

1.3. Modeling Space Use and Human Dynamics with AnyLogic

    1.3.1. Using AnyLogic to Model the Dynamics of Space Use and Human Mobility

    1.3.2. Applying AI to Predict and Improve the Efficiency of Space Use in Urban and Architectural Environments

    1.3.3. Case Studies Showing How Simulation Influences Urban and Architectural Planning

1.4. Predictive Modeling with TensorFlow in Urban Planning

    1.4.1. Implementing TensorFlow for Modeling Urban Dynamics and Structural Behavior

    1.4.2. Using AI to Predict Future Outcomes in City Design

    1.4.3. Examples of How Predictive Modeling Influences Urban Planning and Design

1.5. Predictive Modeling and Generative Design with GenerativeComponents

    1.5.1. Using GenerativeComponents to Merge Predictive Modeling and Generative Design

    1.5.2. Applying Machine Learning Algorithms to Create Innovative and Efficient Designs

    1.5.3. Examples of Architectural Projects that Have Optimized Their Design Using These Advanced Technologies

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.

contains the most complete and up-to-date program on the market. The most important features include:

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 is the most widely used learning system in the best faculties in the world. 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 program, the studies 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 8 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%
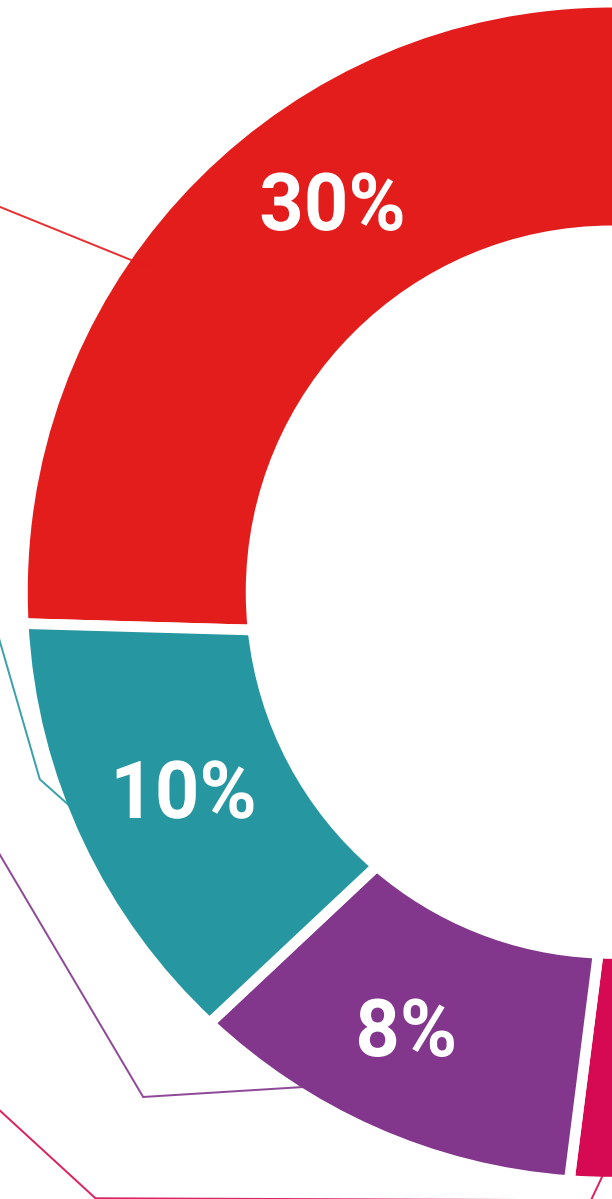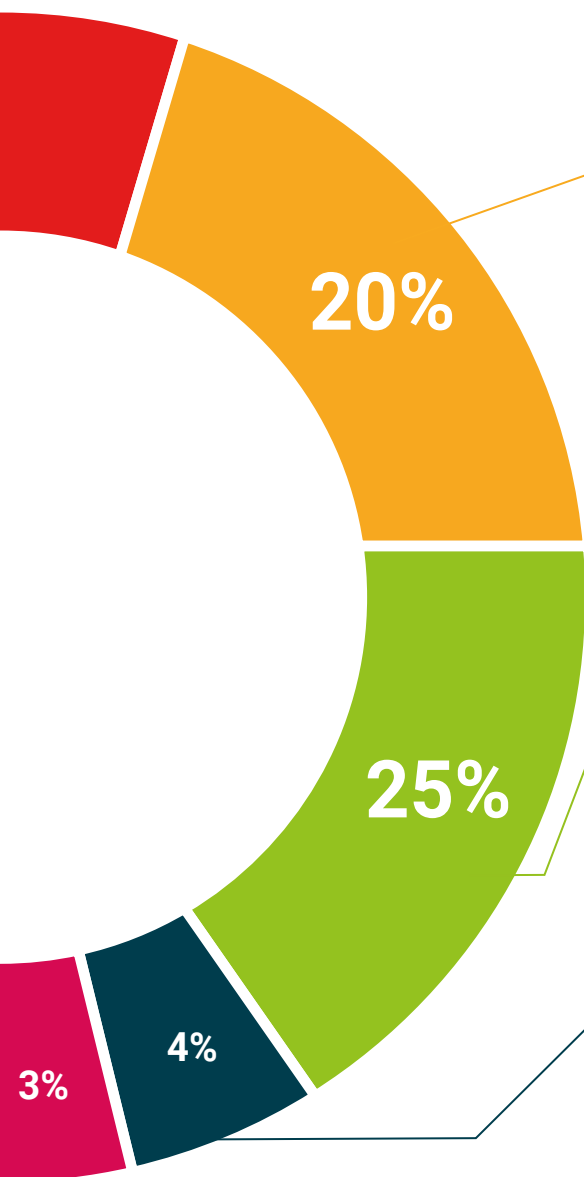
Case Studies

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 Simulation and Predictive Modeling with Artificial Intelligence 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 Heritage Preservation and Restoration with Artificial Intelligence** contains the most complete and up-to-date scientific program on the market.
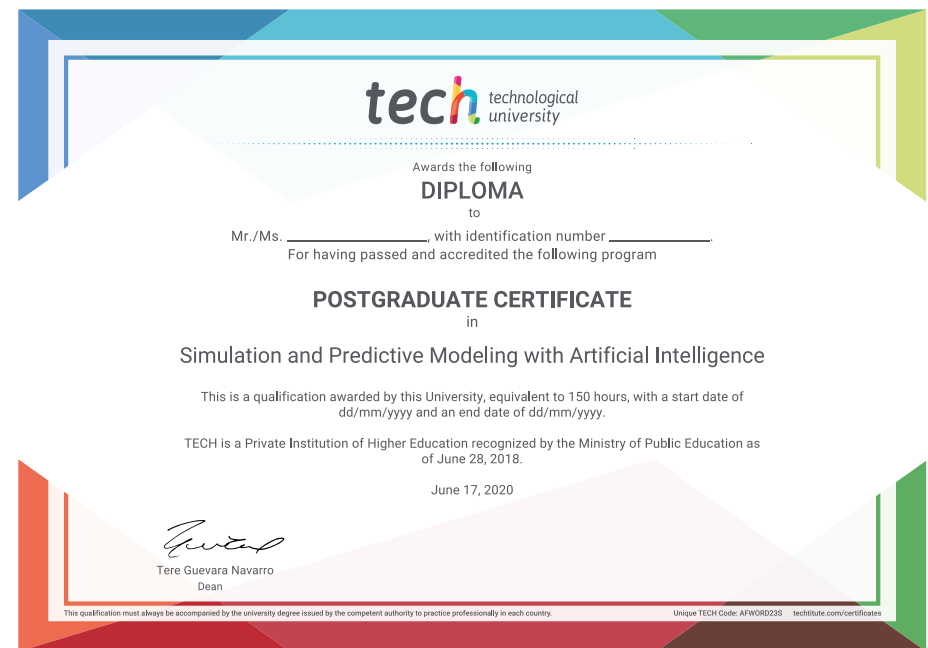
After the student has passed the assessments, they will receive their corresponding **Postgraduate Certificate** issued by **TECH Technological University** via tracked delivery*.

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 Simulation and Predictive Modeling with Artificial Intelligence**

Modality: **online**

Duration: **6 weeks**

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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

Simulation and Predictive Modeling with Artificial Intelligence

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

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 EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

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