

Postgraduate Certificate

Artificial Intelligence-Assisted Design in Architectural Practice



Postgraduate Certificate Artificial Intelligence-Assisted Design in Architectural Practice

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

Website: www.techtute.com/us/artificial-intelligence/postgraduate-certificate/artificial-intelligence-assisted-design-architectural-practice

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01

Introduction

Architectural design is facing increasing challenges in a society that demands more sustainable, adaptive and user-centered solutions. Faced with this situation, Artificial Intelligence has emerged as a valuable tool that allows architects not only to improve efficiency in the design process, but also to explore new aesthetic and functional possibilities. Therefore, professionals need to handle this tool in Assisted Design to create generative models, optimize resources and customize architectural spaces. In this framework, TECH presents an exclusive university program focused on Artificial Intelligence Assisted Design in Architectural Practice. In addition, it is taught entirely in a convenient 100% online mode.





Thanks to this 100% online Postgraduate Certificate, you will use Artificial Intelligence to improve efficiency in the development of architectural projects and make informed strategic decisions based on data"

The increasing complexity of architectural projects and the need to innovate in the creation of sustainable spaces have led to the adoption of Artificial Intelligence technologies in architectural design. A recent study conducted by the World Economic Forum highlights that digitization in construction can generate significant savings and improve the quality of urban life significantly. Given this, experts must acquire advanced skills to efficiently manage Artificial Intelligence and use it to optimize architectural processes.

In order to support them in this task, TECH is launching a pioneering program in Artificial Intelligence-Assisted Design in Architectural Practice. Conceived by references in this field, the academic itinerary will delve into the use of advanced AutoCAD applications, including task automation and optimization of architectural projects. Likewise, the curriculum will delve into generative modeling with Fusion 360, offering students the most advanced techniques to carry out innovative and sustainable designs. The program will also focus on the optimization of architectural designs with Optimus and digital fabrication with Geomagic Wrap. In this way, graduates will acquire advanced skills to use Artificial Intelligence tools in architectural design and optimize both creative and technical processes through data analysis.

The program has a 100% online format, easily accessible from any device with an Internet connection and without predetermined schedules. Along the same lines, TECH is based on the avant-garde teaching method of Relearning, so that architects can deepen their knowledge of the contents without resorting to techniques that involve extra effort, such as memorization. The only thing students will need is an electronic device with Internet access (such as a cell phone, tablet or computer) to access the Virtual Campus. On this platform, graduates will find a variety of multimedia resources such as explanatory videos, interactive summaries or case studies.

The **Postgraduate Certificate in Artificial Intelligence-Assisted Design in Architectural Practice** contains the most complete and up-to-date program on the market. The most important features include:

- ♦ Development of practical cases presented by experts in Artificial Intelligence
- ♦ 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 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



You'll be running IBM Watson Studio at the world's best online university according to Forbes"

“

Looking to use predictive modeling and Big Data analytics to optimize the functionality of architectural spaces? Achieve it with this university program”

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 delve into structural behavior modeling and energy performance optimization using Artificial Intelligence.

You will benefit from a learning system based on repetition, with natural and progressive learning throughout the study plan.



02

Through this Postgraduate Certificate, architects will develop advanced competencies to use Artificial Intelligence tools in architectural design, optimizing processes through automation and data analysis. At the same time, graduates will be able to simulate the behavior of architectural structures under different scenarios to build safer infrastructures. In this sense, students will apply these emerging tools to create sustainable buildings and optimize the use of resources and energy.



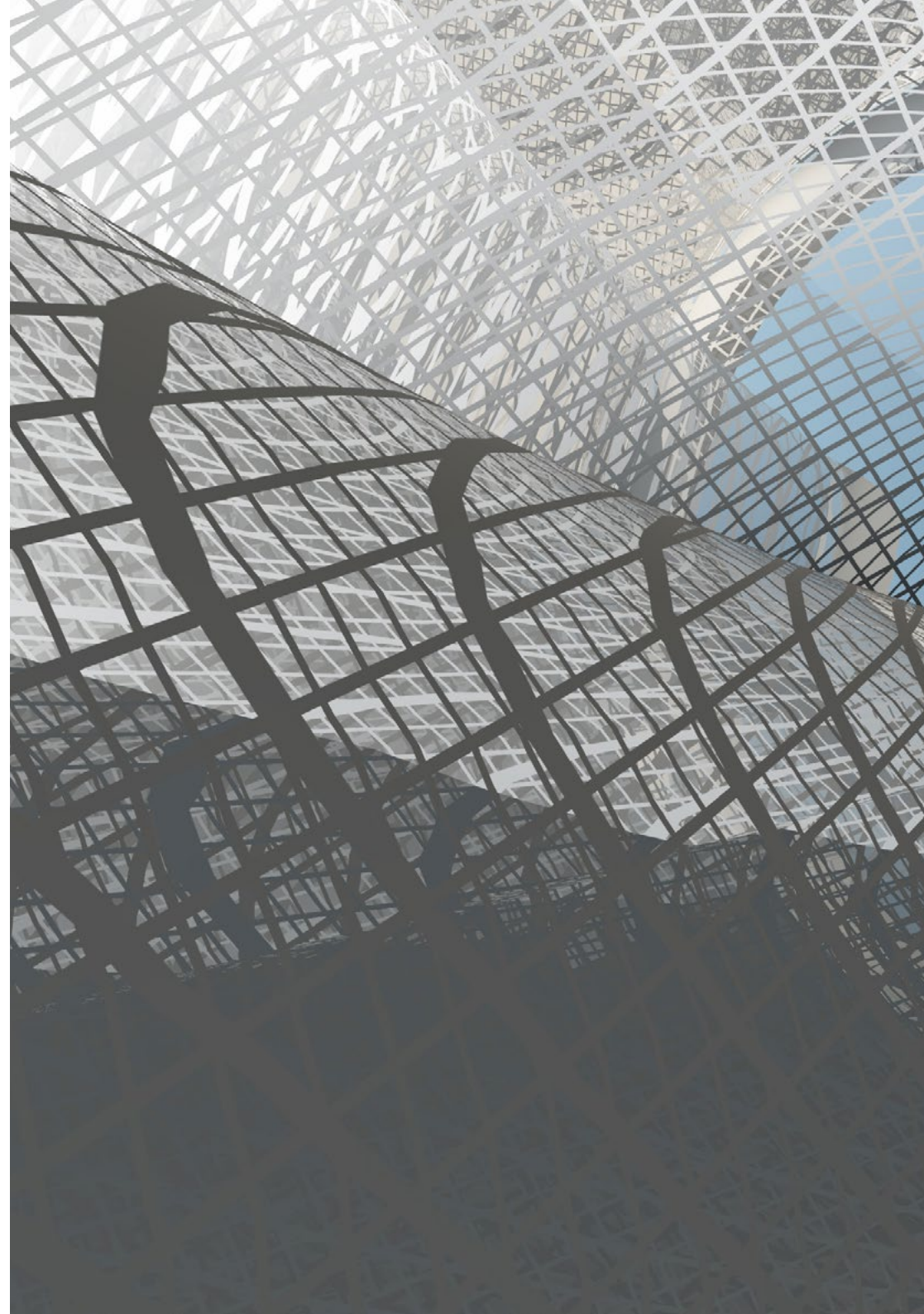
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You will implement generative models as optimization algorithms in the creation of innovative architectural proposals that respond to criteria of functionality, aesthetics and sustainability”



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

- ♦ Utilize AutoCAD and Fusion 360 software to create generative and parametric models that optimize the architectural design process
- ♦ Have a holistic understanding of ethical principles in the use of AI in design, ensuring that architectural solutions are both responsible and sustainable

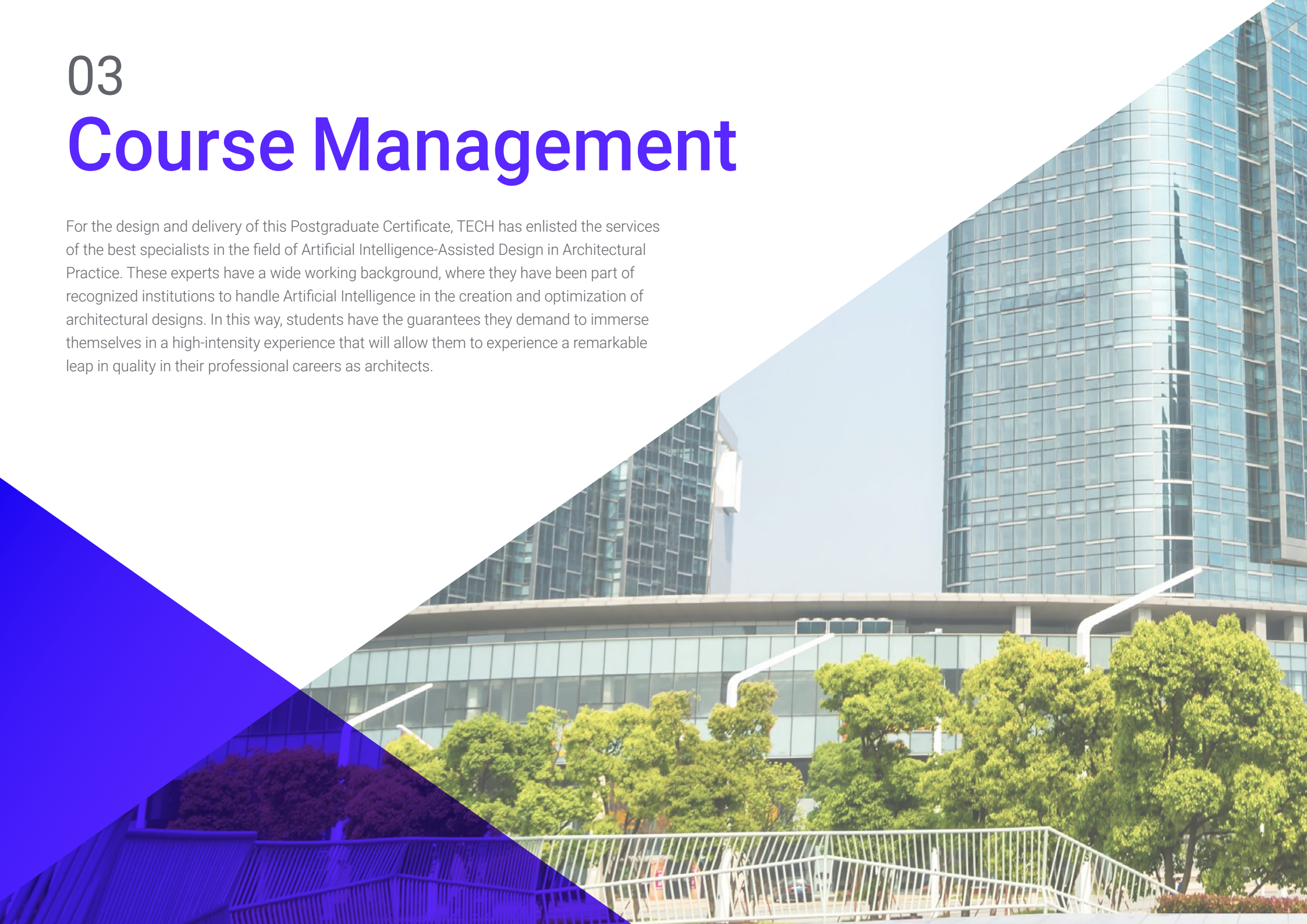


The specialized readings that you will find in the Virtual Campus will allow you to further expand the rigorous information provided in this university program"

03

Course Management

For the design and delivery of this Postgraduate Certificate, TECH has enlisted the services of the best specialists in the field of Artificial Intelligence-Assisted Design in Architectural Practice. These experts have a wide working background, where they have been part of recognized institutions to handle Artificial Intelligence in the creation and optimization of architectural designs. In this way, students have the guarantees they demand to immerse themselves in a high-intensity experience that will allow them to experience a remarkable leap in quality in their professional careers as architects.



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You will have the support of a teaching team made up of authentic references in Artificial Intelligence-Assisted Design in Architectural Practice”

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

Mr. Peralta Vide, Javier

- Technological Coordinator and Content Developer at Aranzadi Laley Formación
- Collaborator at CanalCreativo
- Collaborator at Dentsu
- Collaborator at Ai2
- Collaborator at BoaMistura
- Freelance Architect at Editorial Nivola, Biogen Technologies, Releaf, etc.
- Specialization by Revit Architecture Metropa School
- Graduate in Architecture and Urbanism from the University of Alcalá

Ms. Martínez Cerrato, Yésica

- Responsible for Technical Training at Securitas Seguridad España
- Education, Business and Marketing Specialist
- Product Manager in Electronic Security at Securitas Direct
- 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

04

Structure and Content

This curriculum will delve into aspects such as advanced generative modeling with Fusion 360, digital fabrication with Geomagic Wrap or the implementation of adaptive design using Artificial Intelligence and real-time data. At the same time, the syllabus will delve into the use of CATIA so that students can perform structural or behavioral analysis such as load resistances. In line with this, the didactic materials will analyze how IBM Watson Studio can help to optimize the layout of spaces according to the needs of users, maximizing the functionality and aesthetics of the design.



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You will use Artificial Intelligence to simulate the behavior of architectural structures under different scenarios, allowing you to design more resilient infrastructures”

Module 1. Artificial Intelligence-Assisted Design in Architectural Practice

- 1.1. Advanced AutoCAD Applications with AI
 - 1.1.1. Integration of AutoCAD with AI Tools for Advanced Design
 - 1.1.2. Automation of Repetitive Tasks in Architectural Design with AI
 - 1.1.3. Case Studies Where AI-Assisted AutoCAD Has Optimized Architectural Projects
- 1.2. Advanced Generative Modeling with Fusion 360
 - 1.2.1. Advanced Generative Modeling Techniques Applied to Complex Projects
 - 1.2.2. Using Fusion 360 to Create Innovative Architectural Designs
 - 1.2.3. Examples of Applying Generative Modeling in Sustainable and Adaptive Architecture
- 1.3. Optimizing Designs with AI in Optimus
 - 1.3.1. Optimization Strategies for Architectural Design Optimization Using AI Algorithms in Optimus
 - 1.3.2. Sensitivity Analysis and Exploration of Optimal Solutions in Real Projects
 - 1.3.3. Review of Industry Success Stories Using Optimus for AI-Based Optimization
- 1.4. Parametric Design and Digital Fabrication with Geomagic Wrap
 - 1.4.1. Advances in Parametric Design with AI Integration Using Geomagic Wrap
 - 1.4.2. Practical Applications of Digital Fabrication in Architecture
 - 1.4.3. Outstanding Architectural Projects Using AI-Assisted Parametric Design for Structural Innovations
- 1.5. AI-Assisted Parametric Design for Structural Innovations
 - 1.5.1. Adaptive and Context Sensitive Design with AI Sensors
 - 1.5.2. Implementing Adaptive Design Using AI and Real-Time Data
 - 1.5.3. Examples of Ephemeral Architecture and Urban Environments Designed with AI
- 1.6. Analysis of How Adaptive Design Influences the Sustainability and Efficiency of Architectural Projects
 - 1.6.1. Simulation and Predictive Analytics in CATIA for Architects
 - 1.6.2. Advanced Use of CATIA for Architectural Simulation
 - 1.6.3. Implementing Predictive Analytics in Significant Architectural Projects





- 1.7. Personalization and UX in Design with IBM Watson Studio
 - 1.7.1. IBM Watson Studio's AI Tools for Architectural Personalization
 - 1.7.2. User-Centered Design Using AI Analytics
 - 1.7.3. Case Studies of AI Use Cases for Personalization of Architectural Spaces and Products
- 1.8. Collaboration and Collective Design Powered by AI
 - 1.8.1. AI-Powered Collaborative Platforms for Design Projects
 - 1.8.2. AI Methodologies that Foster Creativity and Collective Innovation
 - 1.8.3. Success Stories and Challenges in AI-Assisted Collaborative Design
- 16.9. Ethics and Responsibility in AI-Assisted Design
 - 1.9.1. Ethical Debates in the Use of AI in Architectural Design
 - 1.9.2. Study on Biases and Fairness in AI Algorithms Applied to Design
 - 1.9.3. Current Regulations and Standards for Responsible AI Design
- 1.10. Challenges and Future of AI-Assisted Design
 - 1.10.1. Emerging Trends and Cutting-Edge Technologies in AI for Architecture
 - 1.10.2. Analysis of the Future Impact of AI on the Architectural Profession
 - 1.10.3. Foresight on Future Innovations and Developments in AI-Assisted Design

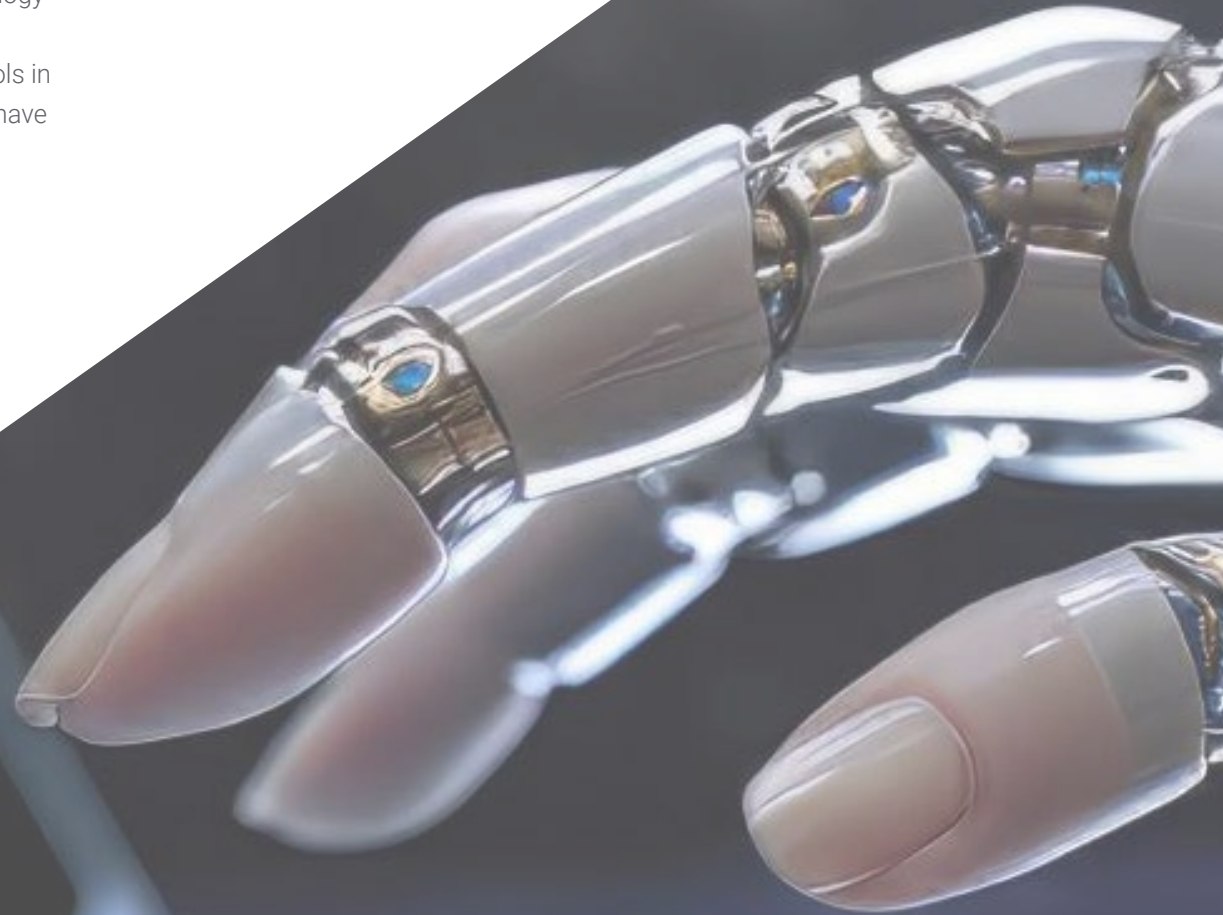


An academic proposal without pre-established schedules and which you can access from any device with an Internet connection. What are you waiting for to enroll?"

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.



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

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.



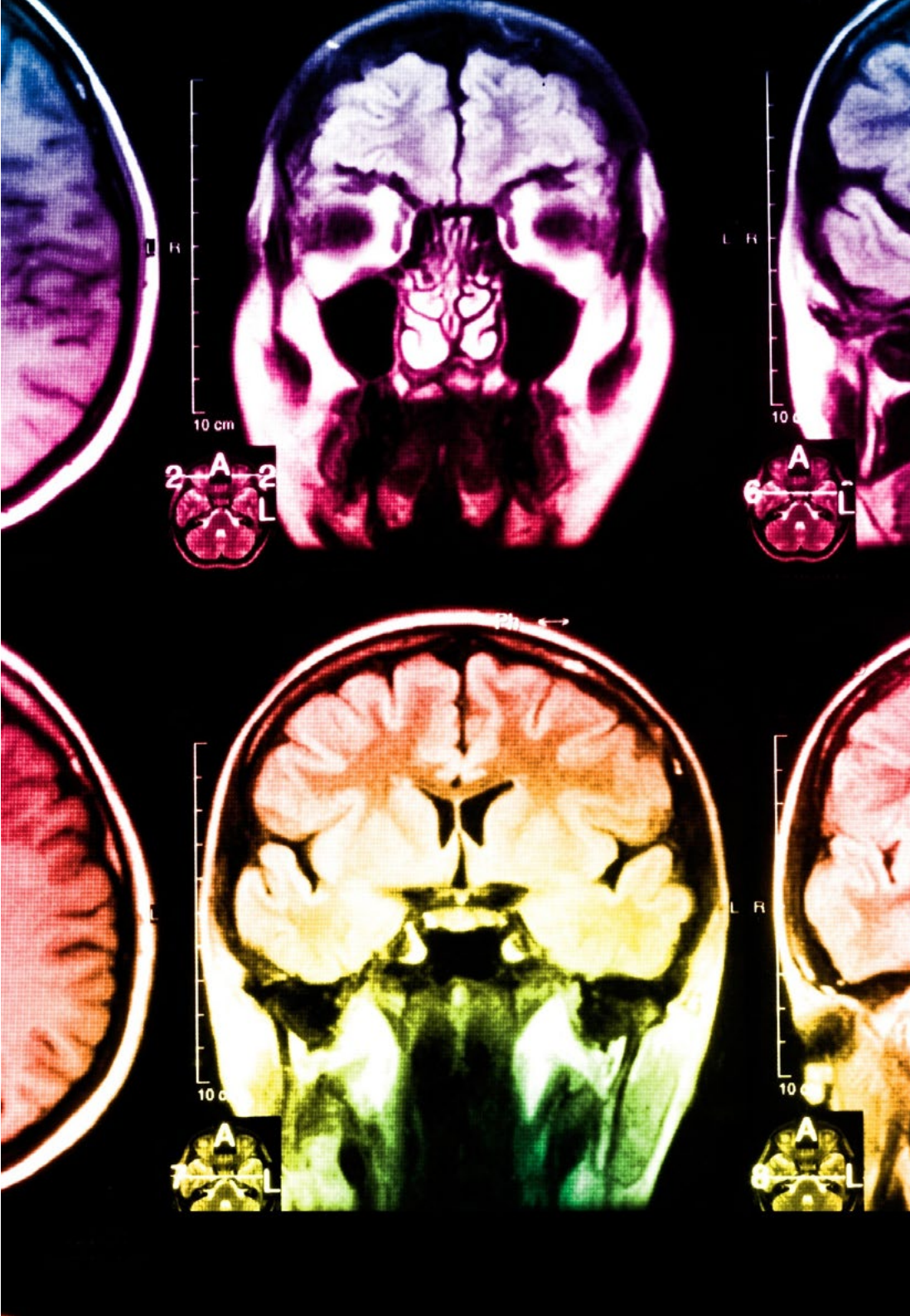
In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

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.



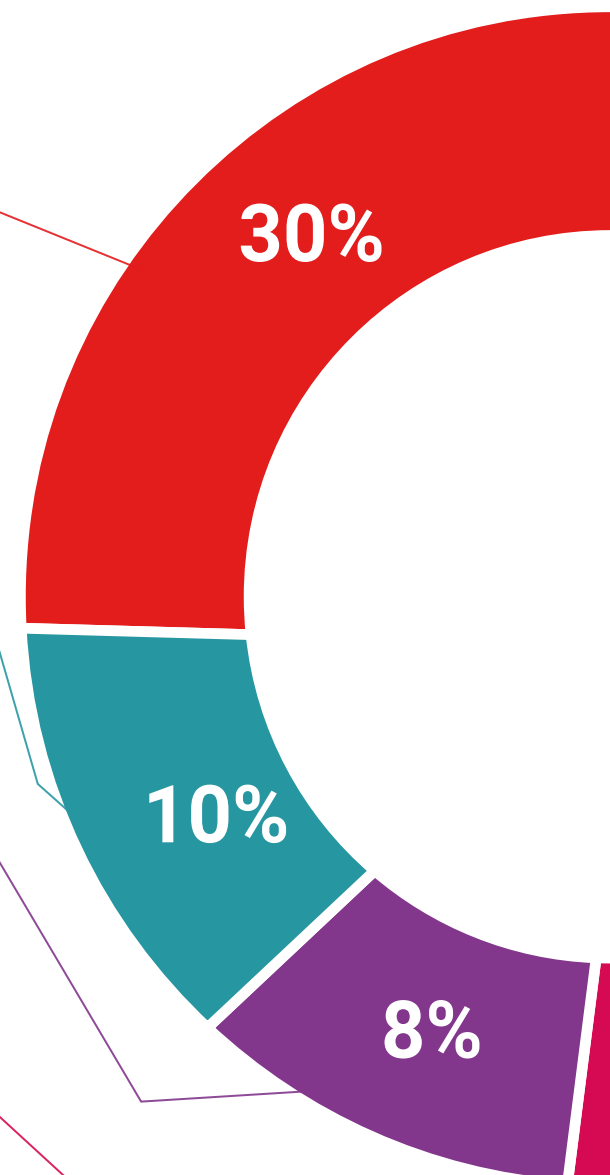
Practising Skills and Abilities

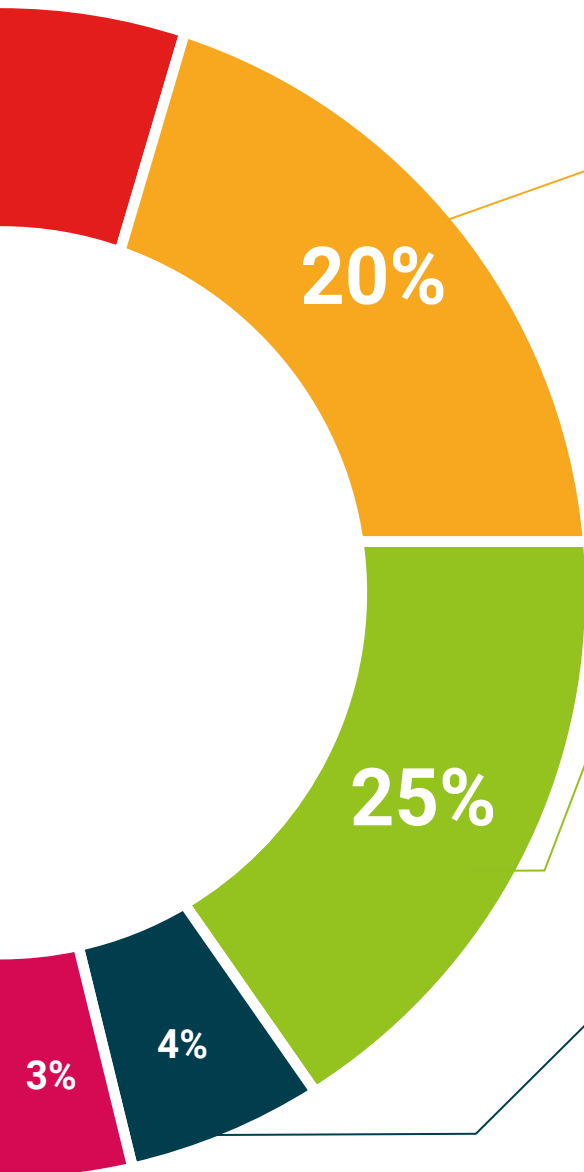
They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



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 Artificial Intelligence-Assisted Design in Architectural Practice 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 Artificial Intelligence-Assisted Design in Architectural Practice** 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 Diploma, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Certificate in Artificial Intelligence-Assisted Design in Architectural Practice**

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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Postgraduate Certificate

Artificial Intelligence-Assisted Design in Architectural Practice