Postgraduate Certificate
Video Game Engines

tech *technological university*

Postgraduate Certificate
Video Game Engines

- » Modality: **online**
- » Duration: **12 weeks**
- » Certificate: **TECH Technological University**
- » Dedication: **16h/week**
- » Schedule: **at your own pace**
- » Exams: **online**

Website: **www.techtitute.com/in/information-technology/postgraduate-certificate/video-game-engines**

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01
Introduction

When developing a video game, one of the most important elements is the engine behind it. Video game engines are the essential systems on which elements such as designs, animations and movements of characters and objects are based.
For this reason, choosing or creating the right engine is one of the most decisive tasks in the entire production process of a product of these characteristics. This course offers students specialized skills in this field so they can contribute to the development of the next successful video games in some of the major companies in the industry.

> *Create the best Engines for the next successful Video Games thanks to what you will learn in this course"*

Videogame Engines are essential, without them this type of products would not have the visual complexity they have today. However, despite being so important, fans usually highlight other more obvious and perceptible aspects such as graphics, designs or gameplay.

But the engine is vital for these aesthetic aspects to develop properly, since it shapes the overall visual functioning of the video game, determines how characters and objects can move through the different scenarios and, in general, strongly affects the way players enjoy it.

For this reason, this Postgraduate Certificate in Video Game Engines offers students specific knowledge and skills they can use to become great specialists in the field, making the best companies in the industry want to hire their services.

Furthermore, the course is taught entirely online, thanks to TECH's innovative teaching methodology, which adapts to the circumstances of each student and allows them to balance their studies with their professional careers.

This **Postgraduate Certificate in Video Game Engines** contains the most complete and up to date scientific program on the market. Its most notable features are:

- ◆ Practical cases presented by experts in video game development
- ◆ The graphic, schematic, and eminently practical contents with which they are created, provide scientific and 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

Videogame Engine Development is a complex process highly valued by companies. Specialize in this area and advance professionally"

"A Videogame Engine is a fundamental part that can make the difference between success or failure. Become an expert and make the Video Games you participate in succeed"

Be the top expert in Videogame Engine creation in your environment and enjoy the best career opportunities.

The best companies in the industry need you, don't keep them waiting.

The program's teaching staff includes professionals from the sector who contribute their work experience to this training 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 training programmed to train in real situations.

The design of this Program focuses on Problem Based Learning, by means of which the professional will have to try to solve the different situations of Professional Practice, which will be posed throughout the Program. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

02
Objectives

The main objective of this Postgraduate Certificate in Videogame Engines is to turn students into great specialists in the field, making the best companies in the industry interested in them. To achieve this, this course offers them a series of essential skills for the Development of this type of Graphics Engines, as well as an innovative teaching process with which students will become highly sought after experts in the industry.

This Postgraduate Certificate in Videogame Engines will help you achieve all your professional goals"

General Objectives

- Understand the importance of Video Game Engines
- Become familiar with the field of Programming as applied to this area
- Observe how Videogame Engines affect the proper or inadequate functioning of a Video Game
- Integrate Engine Operation with the rest of the elements of the video game

You will be the most important professional in your company when you finish this course"

Specific Objectives

◆ Establish the Technical Specifications of the most commonly used Graphics Libraries in Synthetic Imaging

◆ Understand the Basic Principles of 2D and 3D Imaging

◆ Assimilate Image Creation Methods

◆ Apply Visualization, Animation, Simulation and Model Interaction Techniques

◆ Discover Video Game Engine Operation and Architecture

◆ Understand the Basic Features of existing Game Engines

◆ Correctly and efficiently program applications applied to Video Game Engines

◆ Choose the most appropriate paradigm and programming languages to program applications applied to Video Game Engines

03
Structure and Content

This Postgraduate Certificate in Video Game Engines has been designed by great specialists in the field, and they have ensured its contents meet the demands of the industry, so that what students will learn throughout the syllabus can be put into practice in their professional areas immediately. Thus, its eminently practical approach makes this course a very useful academic program for all those who wish to experience a short term job improvement in Video Games development.
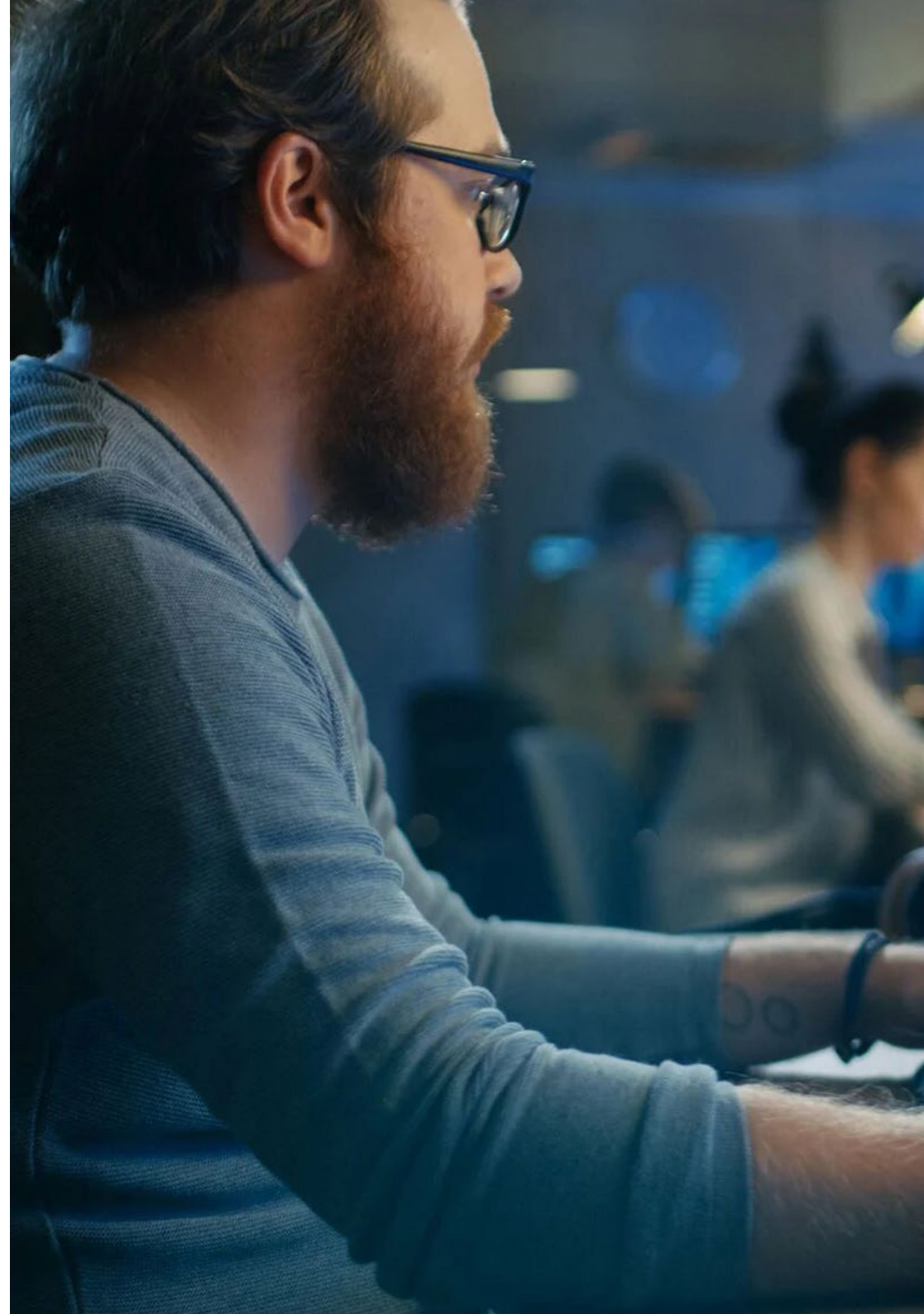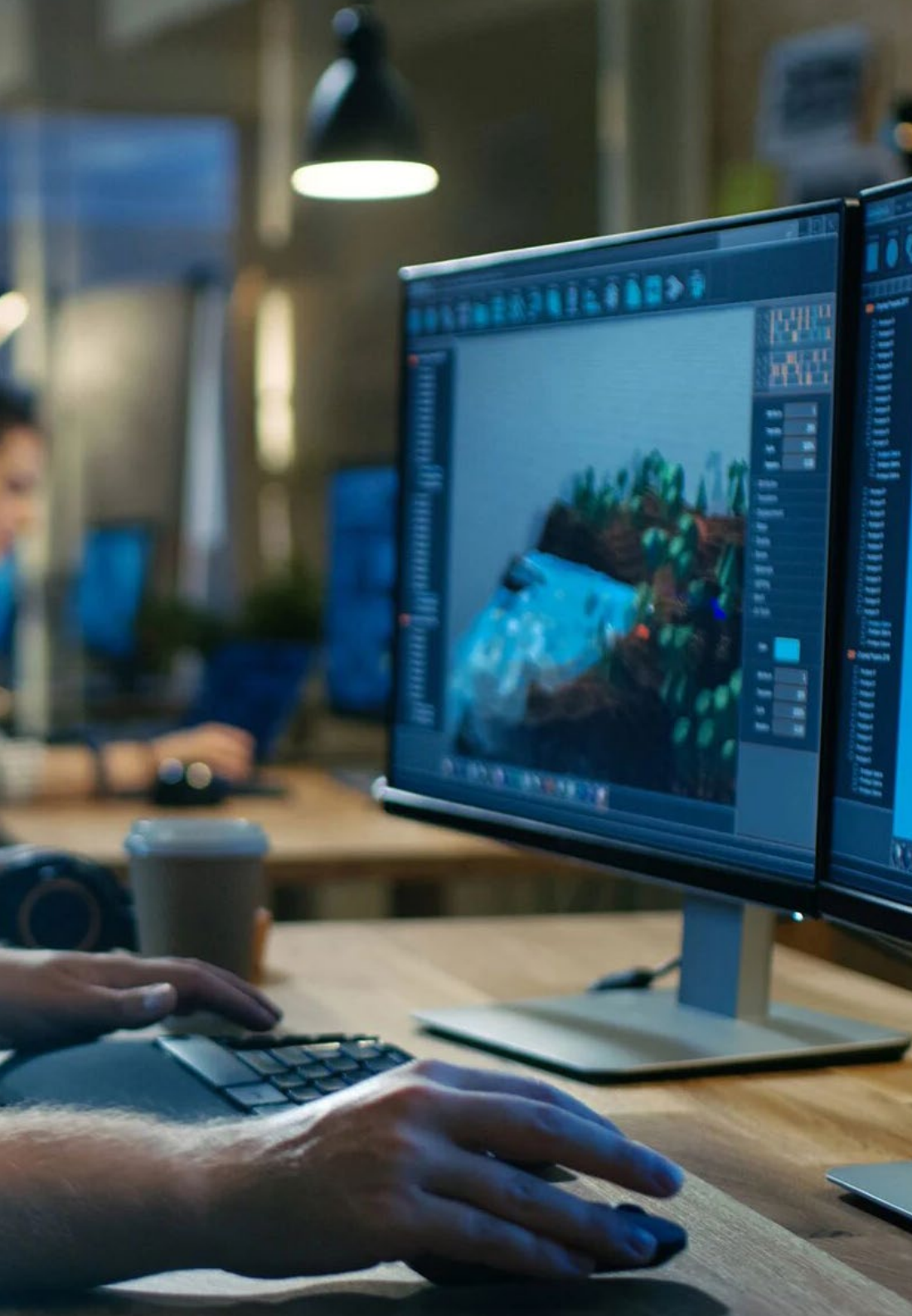
Become the greatest specialist in Videogame Engines in your country thanks to this Postgraduate Certificate"

Module 1. Computer Graphics

1.1.   Computer Graphics Overview
    1.1.1.   Computer Graphics Applications and Uses
    1.1.2.   Computer Graphics History
    1.1.3.   Basic Algorithms for 2D Graphics
    1.1.4.   3D Transformations: Projections and Perspectives

1.2.   Mathematical and Physical Basis for Simulations and Textures
    1.2.1.   Light Rays
    1.2.2.   Absorption and *Scattering*
    1.2.3.   Specular and Diffuse Reflection
    1.2.4.   Color
    1.2.5.   Bidirectional Reflectance Distribution Function (BRDF) Color
    1.2.6.   Energy Conservation and Fresnel F0 Effect
    1.2.7.   Key Features of Physically Based Rendering (PBR)

1.3.   Image Representation: Nature and Format
    1.3.1.   Presentation: Theoretical Foundation
    1.3.2.   Digital Image Size: Color and Resolution
    1.3.3.   Uncompressed Image Formats
    1.3.4.   Compressed Image Formats
    1.3.5.   Color Spaces
    1.3.6.   Levels and Curves

1.4.   Image Representation Textures
    1.4.1.   Procedural Textures
    1.4.2.   Quixel Megascans: Scanning Textures
    1.4.3.   Texture Baking
    1.4.4.   Normal Mapping and Displacement
    1.4.5.   Albedo, Metallic and Roughness Maps

1.5.   Scene Rendering: Display and Lighting
    1.5.1.   Light Direction
    1.5.2.   Contrast
    1.5.3.   Saturation
    1.5.4.   Color
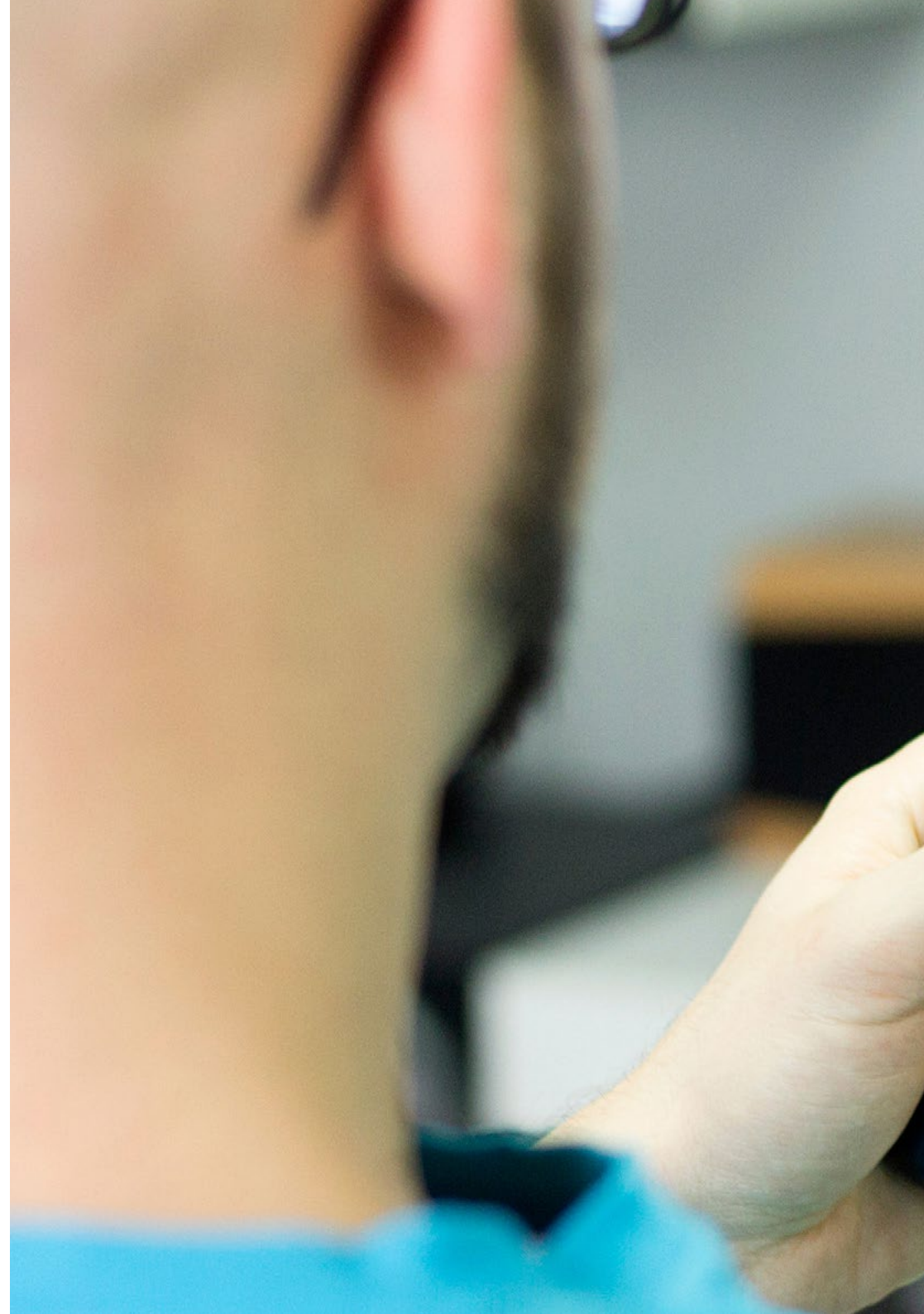   1.5.5.   Direct and Indirect Light

Module 2. Videogame Engines

04
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.

30%

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.

10%

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.

8%

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.

20%

25%

4%

3%
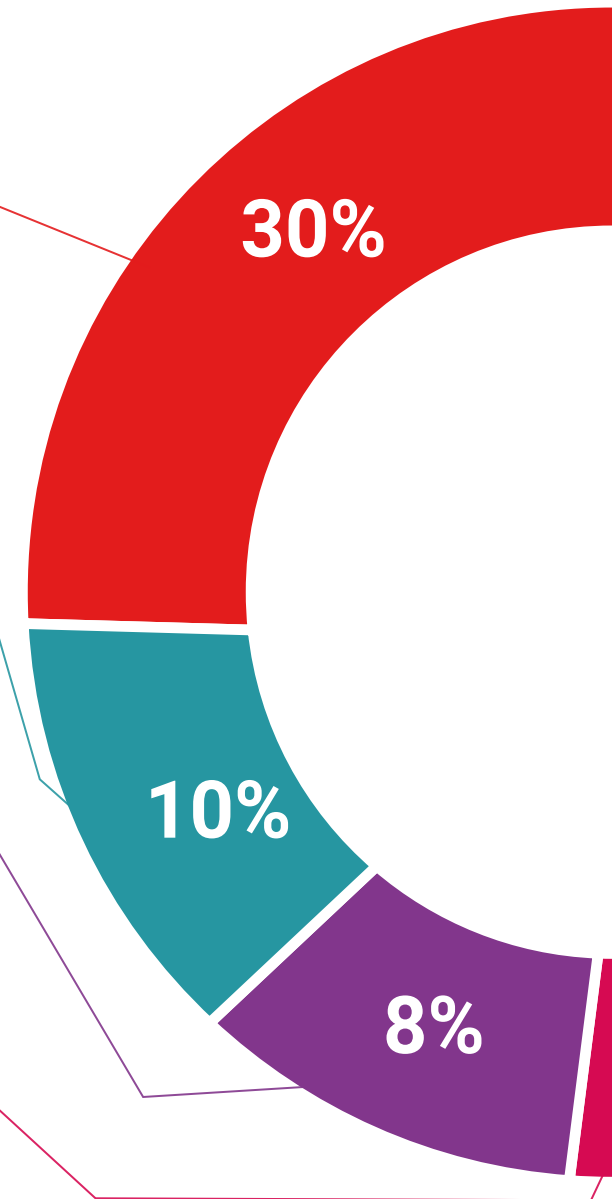
Case Studies

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.

05
Certificate

The Postgraduate Certificate in Video Game Engines guarantees, in addition to the most rigorous and up to date training, access to a qualification issued by TECH Technological University.

Successfully complete this training program and receive your certificate without travel or laborious paperwork"

This **Postgraduate Certificate in Video Game Engines** contains the most complete and up to date scientific program 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 certificate 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 Video Game Engines**
Official Nº of hours: **300 h.**

tech technological university

Awards the following
CERTIFICATE
to

Mr./Ms. _____, with identification number _____.
For having passed and accredited the following program

POSTGRADUATE CERTIFICATE
in

Video Game Engines

This is a qualification awarded by this University, equivalent to 300 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 certificate issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

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