

# Postgraduate Certificate

Lighting, Particles, Materials and  
Textures for 3D Video Games





## Postgraduate Certificate Lighting, Particles, Materials and Textures for 3D Video Games

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

Website: [www.techtitute.com/us/videogames/postgraduate-certificate/lighting-particles-materials-textures-3d-video-games](http://www.techtitute.com/us/videogames/postgraduate-certificate/lighting-particles-materials-textures-3d-video-games)

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# 01

# Introduction

As in all audiovisual representations, the use of lighting techniques in the development of video games is essential to create atmospheres in accordance with the design, playing with lights and generating immersive experiences. This is a compositional element that professionals in this area must handle perfectly, something they will be able to work on with the course of this program. Through 150 hours of diverse material, the graduates will attend an intensive and multidisciplinary training that will allow them to expand their knowledge on the creation of illuminated scenarios, particles, materials and textures. All of this through a 100% online program that is perfect for perfecting your skills as a specialist in the development of 2D and 3D video games.



“

*A 100% online program, with which you will implement the most modern and effective lighting strategies for the development of 2D and 3D video games into your competences”*

Video games are the result of months of intense work by professionals from different areas who have managed to combine, in the same project, complex computer processes with different forms of artistic expression capable of creating immersive atmospheres for their consumers. Among the techniques that stand out the most in these procedures are lighting and the creation of materials and textures, something that any specialist in this area must master if his or her objectives include success in this industry.

An example of this is Silent Hill 2, the title released by Konami in 1999, which revolutionized what was known until then through the play of light and the contrast of colors with the environment and the atmosphere of the title. In order that any graduate interested in this field can know in detail its ins and outs, as well as implement the most effective and innovative audiovisual strategies to their practice, TECH has developed this complete and intensive Postgraduate Course.

It is a multidisciplinary and dynamic postgraduate certificate that gathers the most updated information on the development of 2D and 3D video games, as well as on the creation of interfaces, menus and animation systems through the main techniques for this purpose. In addition, students will be able to work on improving their professional skills for the design of materials, particles and shaders through the mastery of the main tools and software.

For this purpose, 150 hours of the best theoretical, practical and additional content presented in different formats will be available from the beginning of the program for downloading to any device with an internet connection. This is a 100% online educational experience that will allow you to improve your professional profile through a training course adapted to the needs of graduates and to the most demanding specifications of the industry.

This **Postgraduate Certificate in Lighting, Particles, Materials and Textures for 3D Video Games** contains the most complete and up-to-date program on the market. The most important features include:

- ◆ The development of practical cases presented by experts in Video Games and Video Technologies
- ◆ 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
- ◆ Special emphasis on 3D modeling and animation in virtual environments
- ◆ 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



*Mastering the creation of particles, materials and textures from wherever you want, and with a schedule fully adapted to your availability is now possible with TECH and this Postgraduate Certificate”*

“

*Would you like to add to your skills the mastery of shader creation? With this Postgraduate Certificate you will achieve it in less than 6 weeks"*

The program's teaching staff includes professionals from sector 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 academic year. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

*This program will give you the knowledge you need to develop your own interfaces and menus using Unity GUI and UI.*

*A perfect program to work on the different raster graphic resources that exist in the present.*



# 02 Objectives

That graduates have access to an immersive, dynamic, exhaustive and highly enabling degree is TECH's main objective with the launching of this Postgraduate Certificate For this reason, it will provide you with the most complete and updated information on the main lighting and particle creation techniques, materials and textures for 3D video games, as well as the best academic tools available, in order to help you improve your professional skills and exceed your most ambitious expectations in just 6 weeks.







ENERGY

“

*Becoming a technician versed in the areas of lighting and particle, material and texture development for 2D and 3D video games will open many doors in the job market"*



## General Objectives

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- ◆ Delve into the development of elements, visual components and systems related to the 3D environment
- ◆ Generate particle systems and *Shaders* to enhance the artistic finish of the game
- ◆ Develop immersive environments whose visual components can be optimally managed and executed

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*If your objectives include mastering the different lighting modes that exist, as well as light baking, you have the best opportunity to achieve it"*





## Specific Objectives

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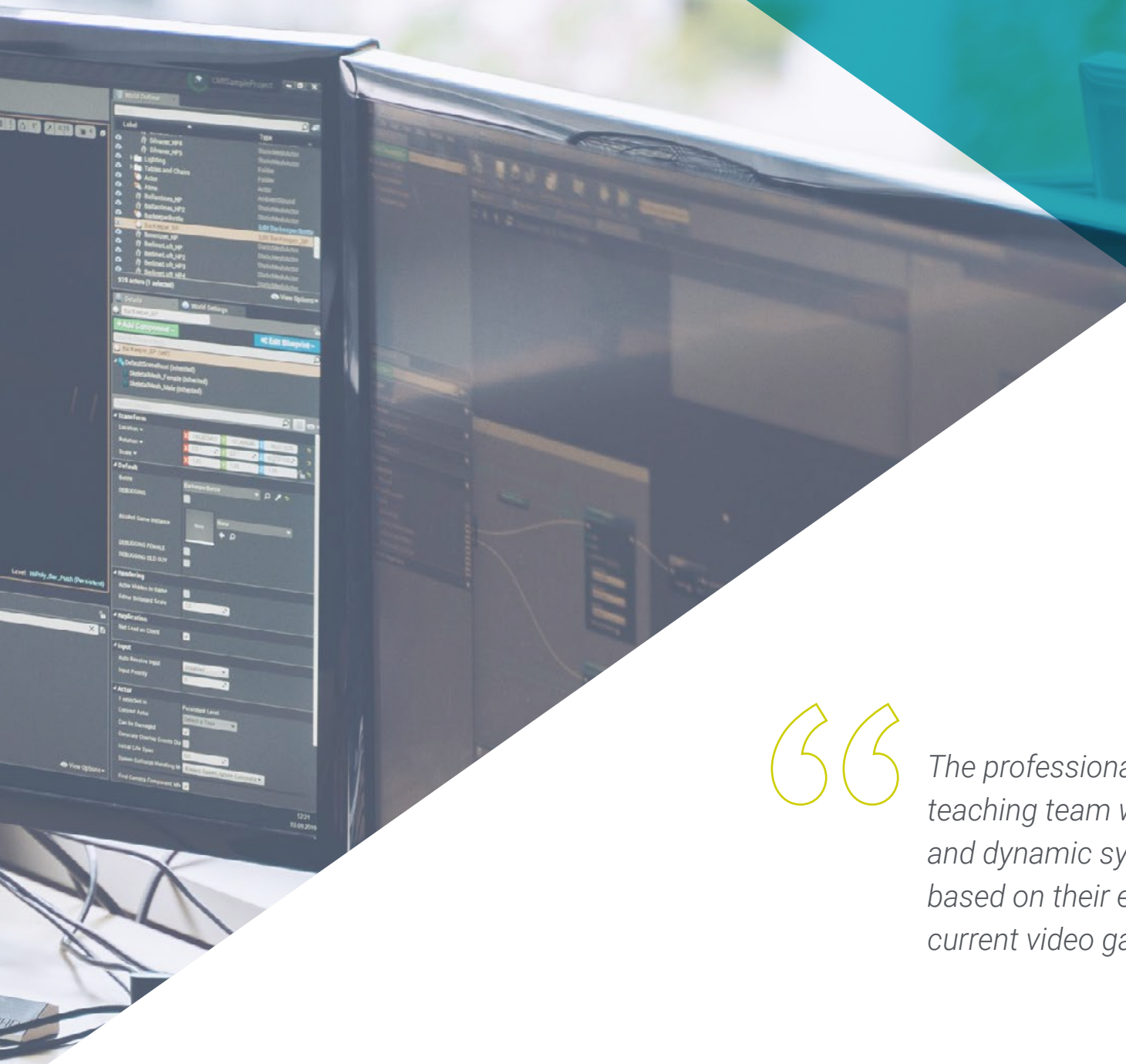
- ◆ Learn how to use raster graphic resources to integrate into 3D video games
- ◆ Implement interfaces and menus for 3D video games, easy to apply to VR environments
- ◆ Create versatile animation systems for professional video games
- ◆ Use shaders and materials to give a professional finish
- ◆ Create and configure particle systems
- ◆ Use optimized lighting techniques to reduce the impact on game engine performance
- ◆ Generate professional quality VFX
- ◆ Know the different components to manage the different types of audio in a 3D video game

# 03

# Course Management

TECH has selected for the direction and teaching of this Postgraduate Certificate a staff versed in the development of 3D video games and audiovisual programming. This is a team of specialists who have extensive knowledge of the industry and have worked on multiple gamers projects, so they can transmit their experience to the graduates allowing them to learn from their own experiences and success strategies. In addition, they will be available to answer any questions that may arise during the course of the Certificate.





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*The professional and human quality of the teaching team will be reflected in a comprehensive and dynamic syllabus, developed by themselves based on their experience and the reality of the current video game sector”*

## Management



### Mr. Ortega Ordóñez, Juan Pablo

- ◆ Director of Engineering and Gamification Design for the Intervenía Group
- ◆ Professor at ESNE of Video Game Design, Level Design, Video Game Production, Middleware, Creative Media Industries, etc
- ◆ Advisor in the foundation of companies such as Avatar Games or Interactive Selection
- ◆ Author of the book Video Game Design
- ◆ Member of the Advisory Board of Nima World

## Professors

### Mr. Ferrer Mas, Miquel

- ◆ Senior Unity Developer at Quantic Brains
- ◆ Lead programmer at Big Bang Box
- ◆ Co-founder and of video game programmer at Carbonbyte
- ◆ Audiovisual Programmer at Unkasoft Advergaming
- ◆ Video game programmer at Enne
- ◆ Design Director at Bioalma
- ◆ Superior Technician in Computer Science at Na Camel-la
- ◆ Master's Degree in Video Game Programming by CICE
- ◆ Introduction to Deep Learning with PyTorch course by Udacity



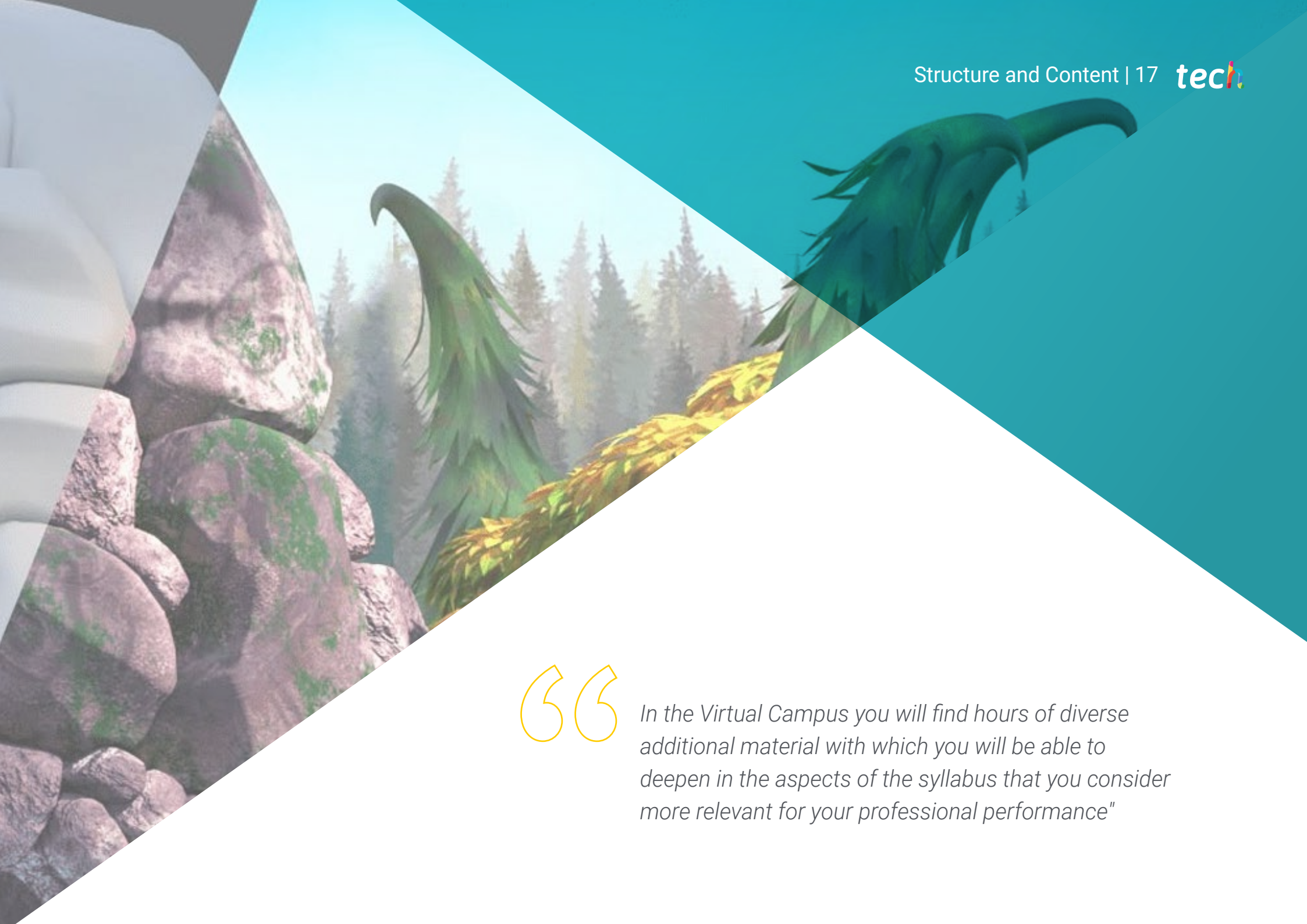
# 04

# Structure and Content

TECH is currently ranked as one of the best online universities in the world, despite its relatively short educational experience. This has been possible thanks to the conformation of high-quality qualifications that include in their content the most exhaustive, diverse and austere information, as well as the best additional material presented in different formats. In addition, these programs are specifically tailored to the needs of their graduates, as well as to the most demanding job requirements of today's industry.







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*In the Virtual Campus you will find hours of diverse additional material with which you will be able to deepen in the aspects of the syllabus that you consider more relevant for your professional performance"*

## Module 1. 2D and 3D Video Game Development

- 1.1. Raster Graphic Resources
  - 1.1.1. Sprites
  - 1.1.2. Atlas
  - 1.1.3. Texture.
- 1.2. Interface and Menu Development
  - 1.2.1. Unity GUI
  - 1.2.2. Unity UI
  - 1.2.3. UI Toolkit
- 1.3. Animation System
  - 1.3.1. Animation Curves and Keys
  - 1.3.2. Applied Animation Events
  - 1.3.3. Modifiers
- 1.4. Materials and Shaders
  - 1.4.1. Material Components
  - 1.4.2. Types of Render Pass
  - 1.4.3. Shaders
- 1.5. Particles
  - 1.5.1. Particle Systems
  - 1.5.2. Transmitters and Sub-Transmitters
  - 1.5.3. Scripting
- 1.6. Lighting
  - 1.6.1. Lighting Modes
  - 1.6.2. Light Baking
  - 1.6.3. Light Probes



- 1.7. Mecanim
  - 1.7.1. State Machines, SubState Machines and Transitions between Animations
  - 1.7.2. Blend Trees
  - 1.7.3. Animation Layers and IK
- 1.8. Cinematic Finish
  - 1.8.1. Timeline
  - 1.8.2. Post-Processing Effects
  - 1.8.3. Universal Render Pipeline and High-Definition Render Pipeline
- 1.9. Advanced VFX
  - 1.9.1. VFX Graph
  - 1.9.2. Shader Graph
  - 1.9.3. Pipeline Tools
- 1.10. Audio Components
  - 1.10.1. Audio Source and Audio Listener
  - 1.10.2. Audio Mixer
  - 1.10.3. Audio Spatializer

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*Give your projects a more professional cinematic finish with the course of this program and stand out among 3D video game creators”*

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.

“

*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 business 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. Over the course of 4 years, you will be presented with multiple practical case studies. You will have to combine all your knowledge, and research, argue, and defend your 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.





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 we live in.



### 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 Technician in Lighting, Particles, Materials and Textures for 3D Video Games guarantees students, 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 Lighting, Particles, Materials and Textures for 3D Video Games** 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 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 Lighting, Particles, Materials and Textures for 3D Video Games**

Official N° of hours: **150 h.**



\*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.

future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present  
development language  
classroom



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