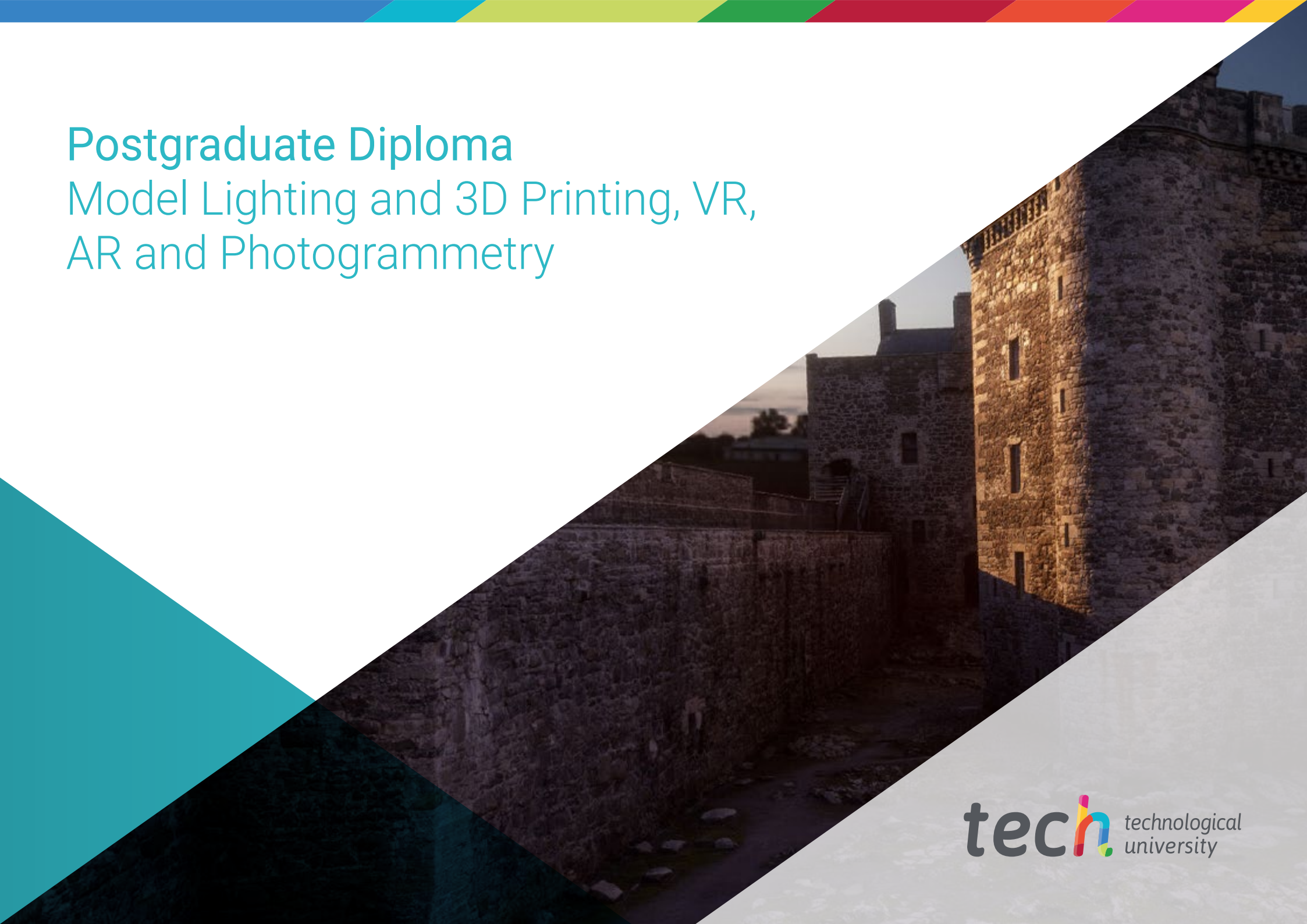
Postgraduate Diploma
Model Lighting and 3D Printing, VR, AR and Photogrammetry



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Postgraduate Diploma
Model Lighting and 3D Printing, VR, AR and Photogrammetry

- Modality: **online**
- Duration: **6 months**
- Certificate: **TECH Technological University**
- Dedication: **16h/week**
- Schedule: **at your own pace**
- Exams: **online**

Website: www.techtitute.com/us/design/postgraduate-diploma/postgraduate-diploma-model-lighting-3d-printing-vr-ar-photogrammetry

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01

Introduction

The concept of digital sculpture has changed radically in recent years due to the requirements of the design industry. The ability to separate textures from models or lighting engines, which is essential when working with *High Poly* details using *Low Poly* systems and making models that are functional for the video game, film and 3D printing industries, is a complex task to this day. Among the digital sculpture techniques that are available, we cannot ignore systems such as VR sculpting, model generation through photographs or modeling within *Unreal* and *Unity*. That is why this online course has been created, in which the different techniques used to create projects carried out under these principles are taught over a period of six months.

With this program, you will be able to learn the fundamentals of 3D modeling and printing, as well as the use of lighting to create volumes and the photogrammetry you need to create different perspectives"

It is important to be able to excel in the industry using free software, which is why this course will give you an in-depth understanding of the following 2D/3D development software: Blender This program has revolutionized the CGI paradigm in recent years, and although at first it was not trusted by large companies, it has strengthened its position and has become a market benchmark since the release of its LTS versions.

Similarly, the course will cover an innovative tool of the same software which large animation studios began using only very recently: *Crease Pencil*, its strongest feature, which has led to the rethinking of concepts such as 2D animation, *Storyboard*, animatics and *Hand Painter*character creation.

In this Postgraduate Diploma in Model Lighting and 3D Printing, VR, AR and Photogrammetry, students will integrate knowledge by studying architectural spaces and sculptures in video game engines such as *Unity* and *Unreal*, which are used by AAA companies like *Epic Games*, infoarchitecture studios and even large animation studios such as Disney; this system has been on the market for a short time and is already pointing to a new course for the CGI industry over the coming years.

Thanks to TECH Technological University's innovative online teaching methodology, students can adapt their reality and current needs to the learning process and decide on the ideal time and place for their studies. A trained teaching team will use numerous multimedia resources to facilitate the process.

This **Postgraduate Diploma in Model Lighting and 3D Printing, VR, AR and Photogrammetry** contains the most complete and up-to-date educational program on the market. Its most notable features are:

- Practical cases presented by experts in 3D modeling and digital sculpture
- The graphic, schematic, and 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

Excel in the application of advanced global illumination techniques, augmented reality, VR and 3D printing and prototyping for your new projects"

Enjoy 6 months learning the most outstanding techniques of model lighting and 3D printing and become an expert"

Learn how to model light to get the most out of 3D objects.

TECH offers its students a dynamic virtual campus that stands out for its efficiency and educational quality. Join the course and get to know this methodology.

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.

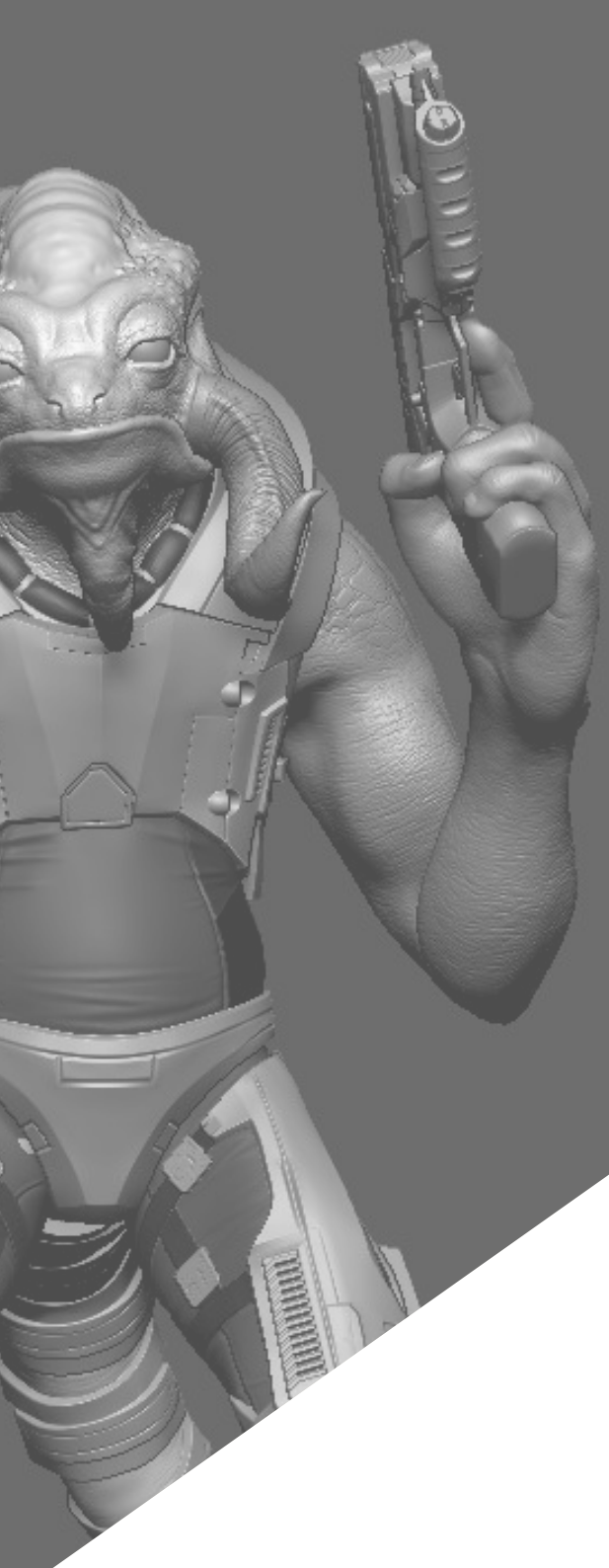
The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersion training programmed to train in real situations.

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise throughout the program. This will be done with the help of an innovative system of interactive videos made by renowned experts.

02

Objectives

The main objective of this professional training is to prepare students to master the techniques, tools and processes involved in the creation of modeling projects and their activation in virtual environments through lighting, 3D, VR, AR printing, and Photogrammetry. Acquire the skills and abilities required to perform successfully in the field.



Achieve mastery of modeling techniques, from Editable Poly, Splines, photogrammetry to virtual reality, by mastering 3D Max, Blender, ZBrush, Substance Painter, Marvelous Designer and Quills"

General Objectives

- Produce specialized, *Hard Surface* and infoarchitecture finishes
- Learn the processes of accurate modeling, texturing, lighting and rendering
- Apply professional lighting on offline engines and Realtime to obtain a high-quality final finish of the models
- Operate modeling, texturing and lighting systems in virtual reality systems
- Know the current demands of the movie and video game industries in order to offer the best results

Learn the most updated techniques in 3D modeling and make professional performance more agile and efficient; with this program, you will master professional lighting in offline engines and Realtime systems to obtain high quality finishes"

Specific Objectives

Module 1. Blender

- Gain advanced knowledge in the use of Blender software
- Render using its Eevee and Cycles render engines
- Delve into work processes within CGI
- Transfer knowledge from ZBrush and 3D Max to Blender
- Transfer creation processes from Blender to Maya and Cinema 4D

Module 2. Modeling with Light

- Develop advanced lighting and photographic concepts using offline engines such as Arnold and V as well as post-production of renders to obtain professional finishes
- In-depth study of advanced visualizations in *Realtime* using Unity and Unreal
- Carry out modeling in video game engines to create interactive scenographies
- Integrate projects in real spaces

Module 3. Creation of Organic Terrains and Environments

- Know the different techniques of organic modeling and fractal systems for generating the elements of nature and terrain, as well as the implementation of our own models and 3D scans
- In-depth study of the vegetation creation system and how to control it professionally in *Unity* and *Unreal Engine*
- Create scenes with immersive VR experiences

03

Course Management

To ensure that the learning process is properly followed, TECH has selected a high-level teaching staff composed of professionals specialized in *concept art* and 3D modeling with exhaustive handling of the latest techniques and tools. This teaching team will facilitate learning of all the contents on Model Lighting and 3D Printing, VR, AR and Photogrammetry, so that students can integrate them into their work practice. As such, this Postgraduate Diploma offers not only an innovative and effective teaching methodology, but also a highly qualified faculty that can provide the answers students need in this complex and exciting career path.

Faculty members for this course possess expert knowledge in Concept Art and 3D modeling, in addition to the educational skills needed to perform in a digital teaching environment"

Management

Mr. Sequeros Rodríguez, Salvador

- Freelance 2D/3D modeler and generalist
- Concept Art and 3D Models for Slicecore. Chicago
- Videomapping and modeling, Rodrigo Tamariz. Valladolid
- Professor of Higher Level Training Cycle in 3D Animation. Higher Education School of Image and Sound ESISV. Valladolid
- Professor of Higher Level Training Cycle GFGS in 3D Animation. European Institute of Design IED Madrid
- 3D modeling for Las Fallas designers Vicente Martinez and Loren Fandos. Castellón
- Master's Degree in Computer Graphics, Games and Virtual Reality. URJC University. Madrid
- Degree in Fine Arts at the University of Salamanca (specializing in Design and Sculpture)

04

Structure and Content

The structure and layout of the content of this Postgraduate Diploma in Model Lighting and 3D, VR, AR Printing and Photogrammetry is organized in 3 specialized modules, through which the professional will acquire the necessary tools and knowledge of Blender as a powerful 2D/3D development software. The course also teaches students to use lighting in order to get the most out of three-dimensional creations, and to create organic terrains and environments by addressing nature in all its forms. This and more in a secure and dynamic 100% online environment.

A course dedicated to teaching the various techniques of 3D model lighting and printing to carry out outstanding projects in the field of virtual reality and artificial intelligence"

Module 1. Blender

1.1. Free Software
- 1.1.1. LTS Version and Community
- 1.1.2. Pros and Differences
- 1.1.3. Interface and Philosophy

1.2. Integration with 2D
- 1.2.1. Adaptation of the Program
- 1.2.2. *Crease Pencil*
- 1.2.3. 2D Combination in 3D

1.3. Modeling Techniques
- 1.3.1. Adaptation of the Program
- 1.3.2. Modeling Methodologies
- 1.3.3. *Geometry Nodes*

1.4. Texturing Techniques
- 1.4.1. *Nodes Shading*
- 1.4.2. Textures and Materials
- 1.4.3. Tips for Use

1.5. Lighting
- 1.5.1. Tips for Light Spaces
- 1.5.2. *Cycles*
- 1.5.3. Eevee

1.6. *Workflow* in CGI
- 1.6.1. Necessary Uses
- 1.6.2. Exportations and Importations
- 1.6.3. Final Art

1.7. Adaptations from 3D Max to Blender
- 1.7.1. Modeling
- 1.7.2. Texturing and *shading*
- 1.7.3. Lighting

1.8. From ZBrush to Blender
- 1.8.1. 3D Sculpting
- 1.8.2. Brushes and Advanced Techniques
- 1.8.3. Organic Work

1.9. From Blender to Maya
- 1.9.1. Important Steps
- 1.9.2. Settings and Integrations
- 1.9.3. Exploitation of Functionalities

1.10. From Blender to 4D Cinema
- 1.10.1. Tips for 3D Design
- 1.10.2. Use of the Model for *Video Mapping*
- 1.10.3. Modeling with Particles and Effects

Module 2. Modeling with Light

2.1. Offline Arnold Methods
- 2.1.1. Indoor and Outdoor Lighting
- 2.1.2. Application of Displacement and Normal Maps
- 2.1.3. Render Modifiers

2.2. V-Ray
- 2.2.1. Lighting Platforms
- 2.2.2. *Shading*
- 2.2.3. Maps

2.3. Advanced Global Lighting Techniques
- 2.3.1. *ActiveShade* GPU Management
- 2.3.2. Optimization of Photorealistic Render *Denoiser*
- 2.3.3. Non-Photorealistic Rendering (*Cartoon* and *Hand Painted*)

2.4. Quick Display of Models
- 2.4.1. ZBrush
- 2.4.2. *KeyShot*
- 2.4.3. *Marmoset*

2.5. Post-Production of Renders
- 2.5.1. Multi-Pass
- 2.5.2. 3D Illustration in ZBrush
- 2.5.3. ZBrush Multi-Pass

2.6. Integration into Real Spaces
- 2.6.1. Shading Materials
- 2.6.2. HDRI and Global Lighting
- 2.6.3. Image Tracking

2.7. Unity
- 2.7.1. Interface and Configuration
- 2.7.2. Import into Video Game Engines
- 2.7.3. Materials

2.8. Unreal
- 2.8.1. Interface and Configuration
- 2.8.2. Sculpture in Unreal
- 2.8.3. *Shaders*

2.9. Modeling in Video Game Engines
- 2.9.1. *ProBuilder*
- 2.9.2. *Modeling Tools*
- 2.9.3. *Prefabs* and Memory Stored

2.10. Advanced Lighting Techniques for Video Games
- 2.10.1. *Realtime*, Pre-Calculation of Lights and HDRP
- 2.10.2. *Raytracing*
- 2.10.3. Post-Processing

Module 3. Creation of Organic Terrains and Environments

3.1. Organic Modeling in Nature
- 3.1.1. Brush Adaptations
- 3.1.2. Creation of Rocks and Cliffs
- 3.1.3. Integration with 3D Substance Painter

3.2. Terrain
- 3.2.1. Terrain Displacement Maps
- 3.2.2. Creation of Rocks and Cliffs
- 3.2.3. Scanning Software Libraries

3.3. Vegetation
- 3.3.1. *SpeedTree*
- 3.3.2. *Low Poly* Vegetation
- 3.3.3. Fractals

3.4. Unity Terrain
- 3.4.1. Organic Model of Terrain
- 3.4.2. Terrain Painting
- 3.4.3. Creation of Vegetation

3.5. Unreal Terrain
- 3.5.1. *Height Map*
- 3.5.2. Texturing
- 3.5.3. *Unreal's Foliage System*

3.6. Physics and Realism
- 3.6.1. Physical
- 3.6.2. Wind
- 3.6.3. Fluids

3.7. Virtual Walks
- 3.7.1. Virtual Cameras
- 3.7.2. Third Person
- 3.7.3. First Person FPS

3.8. Cinematography
- 3.8.1. *Cinemachine*
- 3.8.2. *Sequencer*
- 3.8.3. Recording and Executables

3.9. Visualization of the Model in Virtual Reality
- 3.9.1. Modeling and Texturing Tips
- 3.9.2. Exploitation of the Interaxial Space
- 3.9.3. Project Preparation

3.10. VR Scene Creation
- 3.10.1. Location of the Cameras
- 3.10.2. Land and Infoarchitecture
- 3.10.3. Parameters of Use

Working in virtual environments requires specialized training that will allow one to enter a competitive labor market. Excellence makes the difference"

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.

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 we face 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

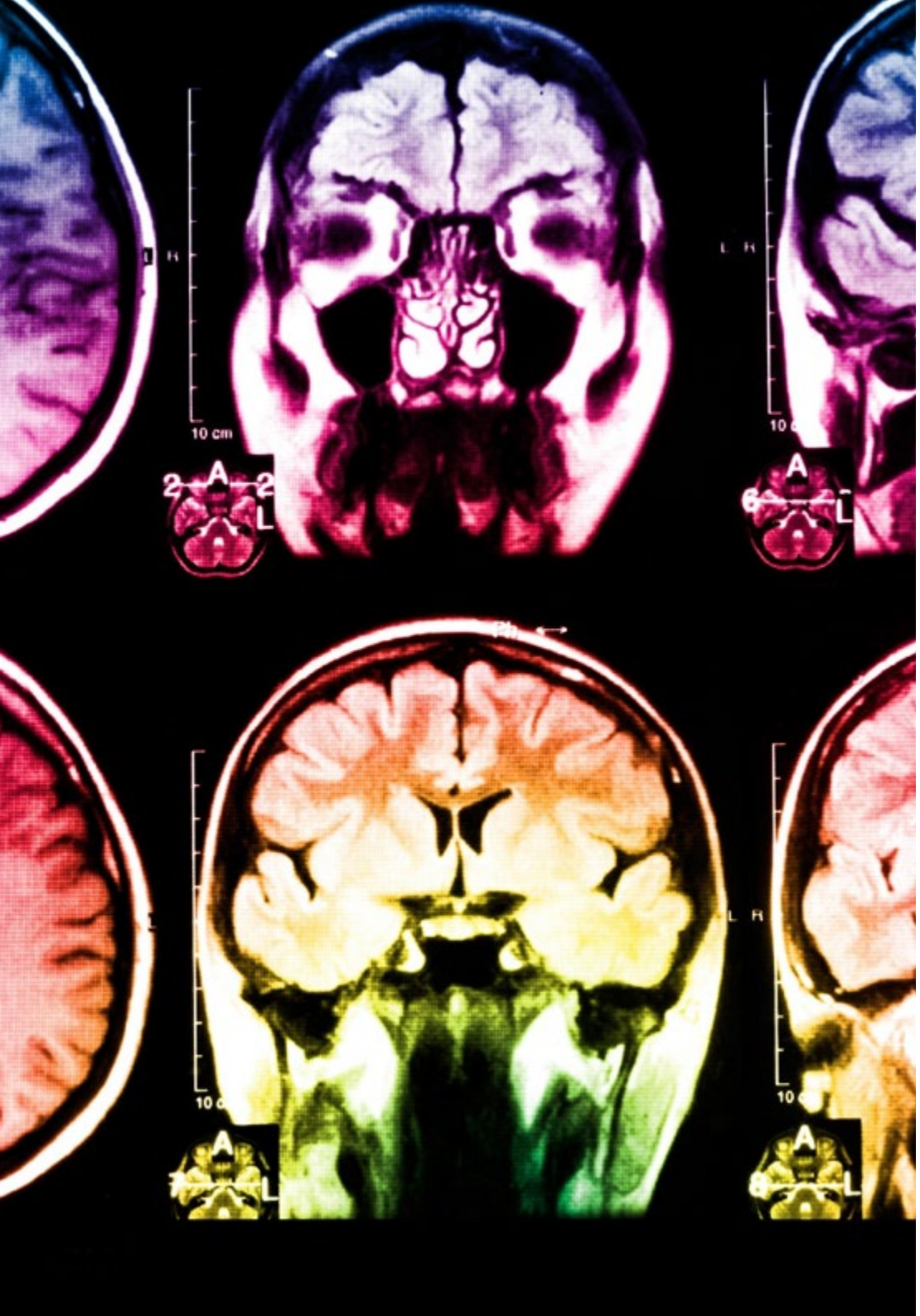
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

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.



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. With this methodology we have 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, markets, and financial 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.

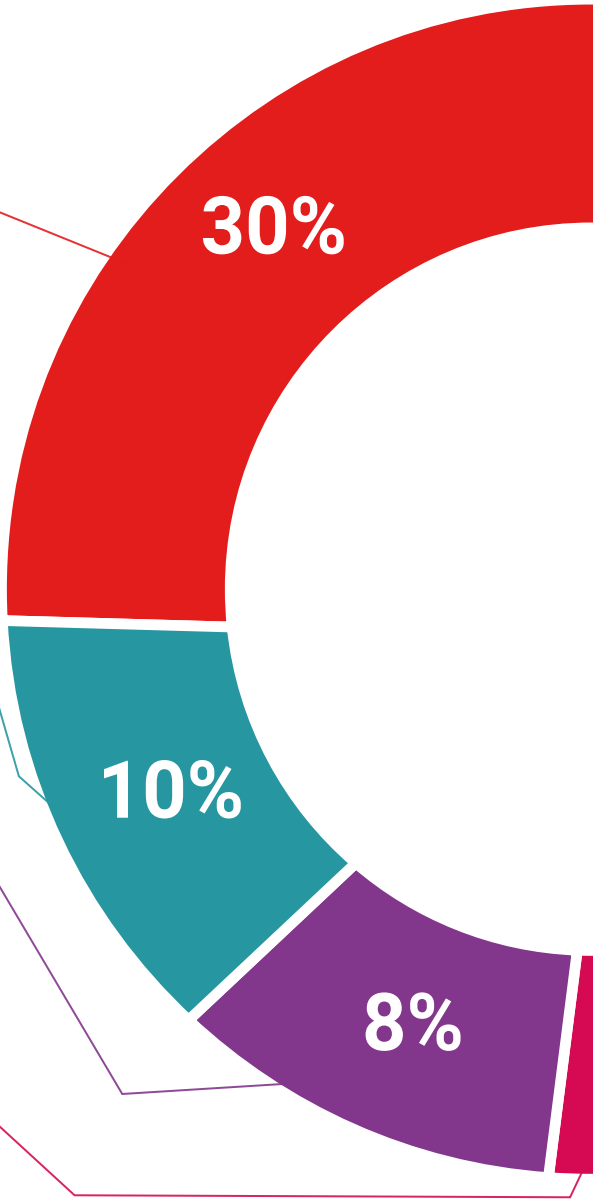
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

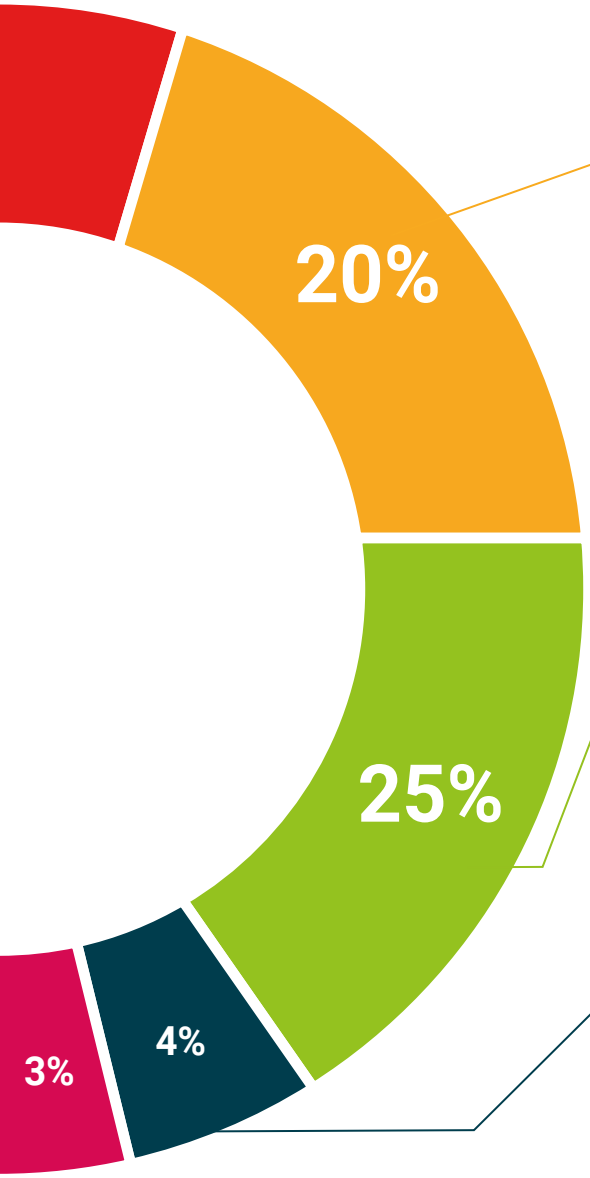
Practising Skills and Abilities

They will carry out activities to develop specific competencies and skills in each thematic 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 Diploma in Model Lighting and 3D Printing, VR, AR and Photogrammetry guarantees students, in addition to the most rigorous and up-to-date education, access to a qualification 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 Diploma in Model Lighting and 3D Printing, VR, AR and Photogrammetry** contains the most complete and up-to-date program on the market.

After students have passed the assessments, they will receive their corresponding Postgraduate Diploma 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 Diploma in Model Lighting and 3D Printing, VR, AR and Photogrammetry**

Official Nº of Hours: **450 h.**


tech technological university

Awards the following

DIPLOMA

to

Mr./Ms. _____, with identification number _____.

For having passed and accredited the following program

POSTGRADUATE CERTIFICATE

in

Model Lighting and 3D Printing, VR, AR and Photogrammetry

This is a qualification awarded by this University, equivalent to 450 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

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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Postgraduate Diploma

Model Lighting and 3D Printing, VR, AR and Photogrammetry

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