Postgraduate Diploma

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

tech global university

tech global university

Postgraduate Diploma

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

- Modality: **online**
- Duration: **6 months**
- Certificate: **TECH Global University**
- Credits: **18 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Website: www.techtitute.com/us/information-technology/postgraduate-diploma/postgraduate-diploma-model-illumination-3d-printing-vr-ar-photogrammetry

Index

01

Introduction

Digital sculpting is developing in more and more application areas, such as 3D printing, VR sculpting, AR and photogrammetry. In order to be able to work in this field correctly, it is necessary to control the Blender software in an advanced way, as well as to know how to model with light, thanks to the specialized and advanced specific tools for this purpose, and also to know how to create and modify surfaces, terrains and environments. In other words, there is an increasing need for experts who know how to perform diverse and applicable functionalities in the aforementioned areas. To this end, this Postgraduate Diploma has focused on empowering students with specific areas of expertise and assembling a teaching group made up of true industry professionals.

Prepare yourself professionally to become an expert in model lighting and 3D printing, VR sculpting, AR and Photogrammetry with this program"

This comprehensive curriculum takes a tour through the main areas of specialization to become an expert in 3D Printing, VR, AR and Photogrammetry. Starting with an in-depth study of Blender software, the student will learn how to work with this software in an advanced way, to render in its render engines Eevee and Cycles and to delve into CGI work processes. In addition, we will also go in depth on how to transfer knowledge from ZBrush and 3DS Max to Blender and how to transfer creation processes from Blender to Maya and Cinema 4D.

On the other hand, we will work on the development of modeling with light, for which the educational program focuses on developing advanced concepts of lighting and photography in offline engines such as Arnold and Vray, as well as the post-production of renders to have professional finishes, delve into advanced visualizations in real time in Unity and Unreal Engine, modeling in video game engines to create interactive scenographies and integrate projects in real spaces.

A final section is fully dedicated to the different techniques of organic modeling and fractal systems for the generation of elements of nature and terrain, as well as delving into the system of creating vegetation and how to control it professionally in Unity and Unreal and creating scenes with immersive experiences in VR.

TECH Global University develops its training in online format, to make it easier to reconcile studies with other professional and personal aspects. In addition, the teaching teams are made up of real professionals in the sector, which gives added value to the fact that the student not only learns in the theoretical and practical dimension, but also in the acquisition of professional criteria and sensitivity when facing new projects and professional challenges.

The **Postgraduate Diploma in Model Illumination and 3D Printing, VR, AR and Photogrammetry** contains the scientific most complete and up-to-date educational program on the market The most important features include:

- The development of case studies presented by experts in 3D Modeling and Digital Sculpture
- 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

Acquire the best skills in modeling, texturing, rendering and lighting in three-dimensional modeling"

Are you looking for professional finishes in your 3D modeling? Develop advanced lighting and photography concepts in offline engines such as Arnold and Vray with this Postgraduate Diploma"

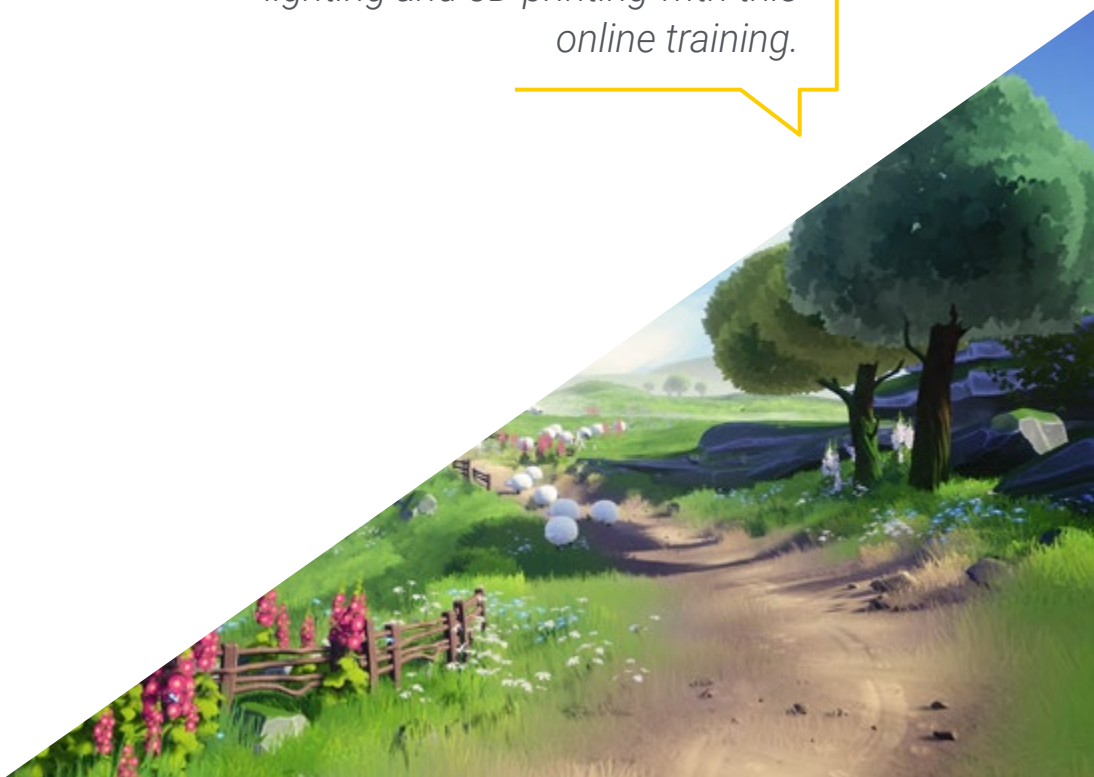
Learn how to deal with the most advanced Blender settings and how to use it to create new 3D models.

Refresh your knowledge in model lighting and 3D printing with this online training.

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.

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.



02

Objectives

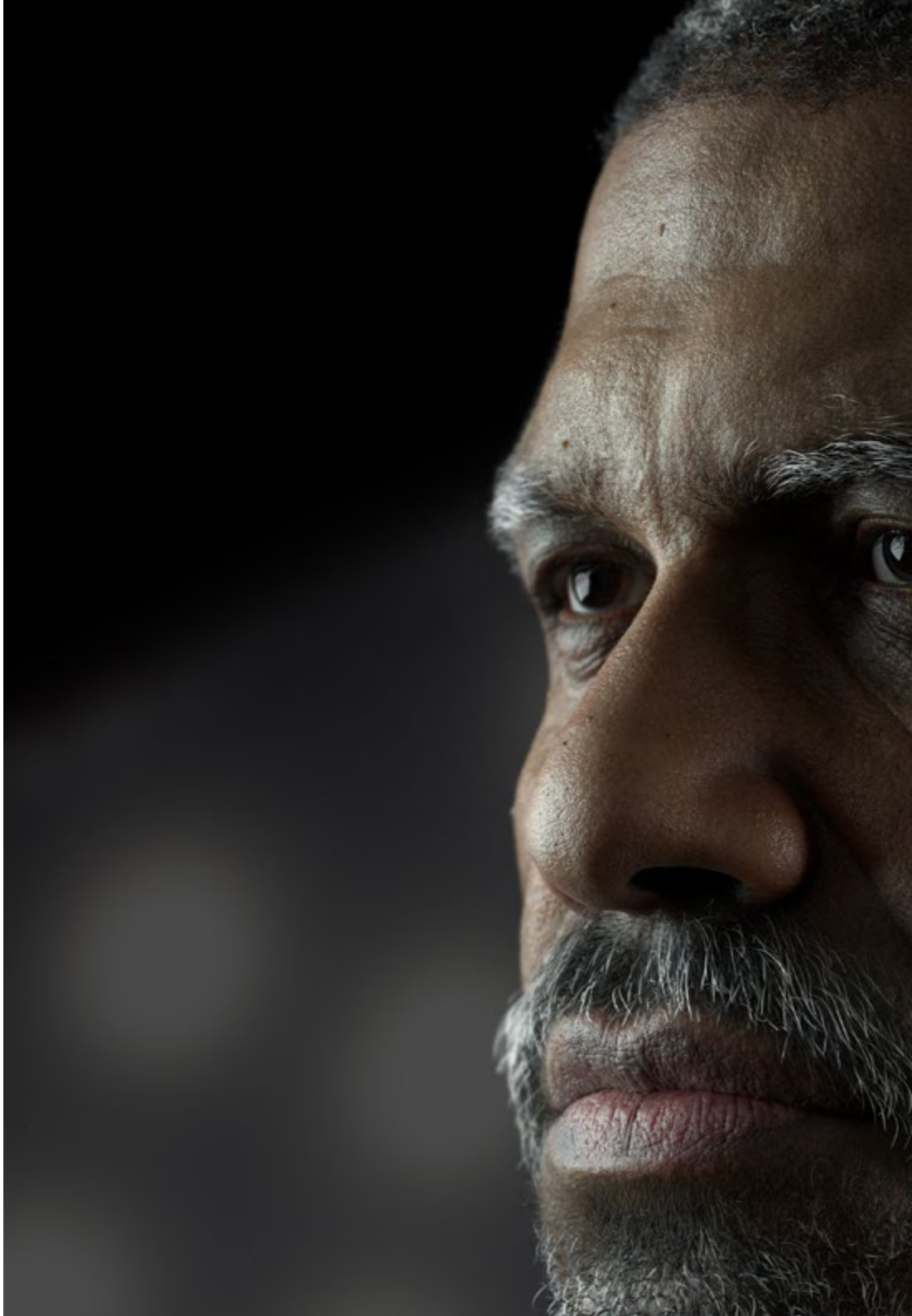
This training is mainly focused on the processes of modeling, texturing, lighting and rendering in a precise way, for its subsequent application in Model Lighting and 3D Printing, VR, AR and Photogrammetry. Other objectives include: achieving specialized hardsurface and infoarchitecture finishes, mastering professional lighting in offline engines and realtime systems, and handling modeling, texturing and lighting systems in virtual reality systems. The aim is for students to develop not only the express skills, but also the transversal skills that allow the development of professional criteria.

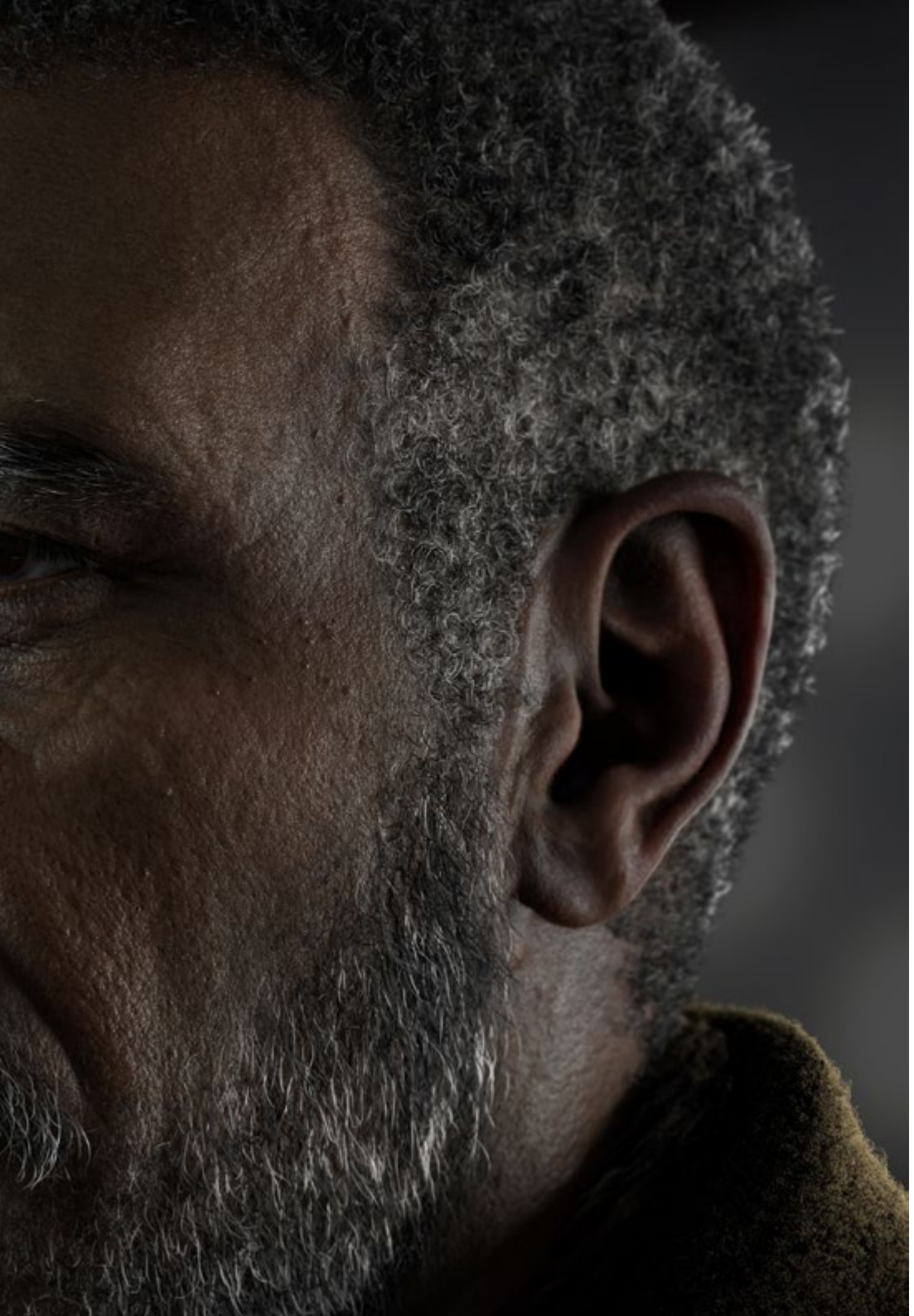
Knows in depth the processes of modeling, texturing, lighting and rendering in a precise way"

General objectives

- Specialized hard surface finishing and infoarchitecture
- Know the processes of modeling, texturing, lighting and rendering in a precise way
- Apply professional lighting on offline engines and realtime systems to obtain a high-quality final finish of the models
- Handle modeling, texturing and lighting systems in virtual reality systems
- Know the current systems of the film and video game industry to deliver great results

This Postgraduate Diploma delves into advanced visualizations in real time in Unity and Unreal, as well as the vegetation creation system and how to control it professionally with these same tools"





Specific objectives

Module 1. Blender

- Advanced Blender software development
- Render in your Eevee and Cycles render engines
- Delve into work processes within CGI
- Transferring ZBrush and 3ds Max knowledge to Blender
- Transferring creation processes from Blender to Maya and Cinema 4D

Module 2. Light Modeling

- Develop advanced lighting and photography concepts in offline engines such as Arnold and Vray, as well as post-production of renders to have professional finishes
- Deepen in advanced visualizations in *realtime* in *Unity* and Unreal
- Modeling in videogame engines to create interactive scenographies
- Integrate projects in real spaces

Module 3. Creation of Organic Soils and Environments

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

03

Course Management

TECH integrates, in all its degrees, a teaching staff made up of true professionals in the sector. They are experts in digital sculpture, who have dedicated their entire active lives to the research and professional development of the most advanced techniques in the sector. In addition, they provide training using relearning and learning by doingtechnology, encouraging autonomous learning by the students. In this way, they facilitate student access to all the teaching material available through the virtual classroom.

The teachers in this training use a methodology based on relearning and learning by doing to encourage autonomous student learning"

Management

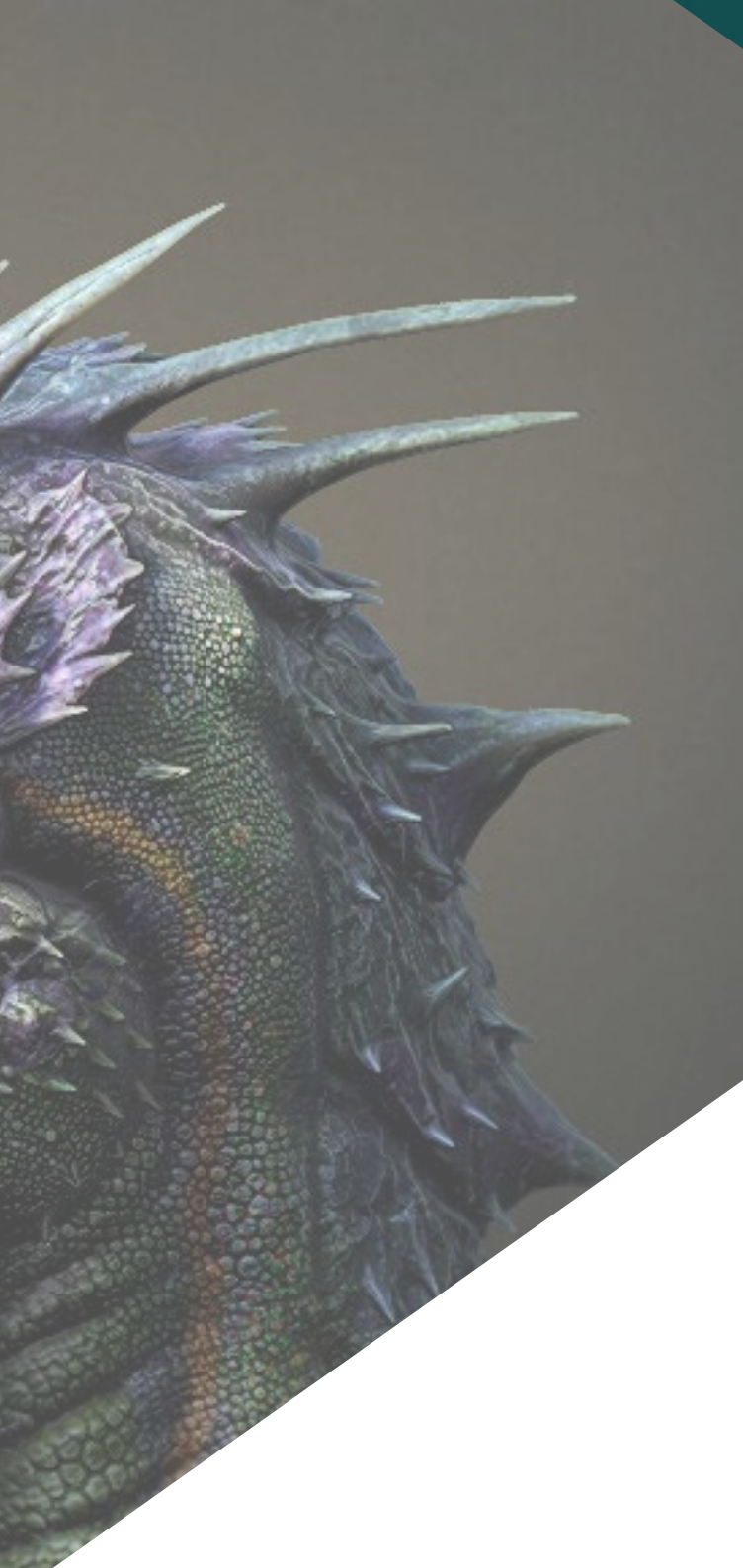
Mr. Sequeros Rodríguez, Salvador

- Freelance 2D/3D modeler and generalist
- Concept art and 3D modeling for Slicecore Chicago
- Videomapping and modeling Rodrigo Tamariz Valladolid
- Professor of Higher-Level Training Cycle 3D Animation, Escuela Superior de Imagen y Sonido ESISV, Valladolid
- Professor of Higher Level Training Cycle GFGS 3D Animation, European Institute of Design IED, Madrid
- 3D modeling for the falleros Vicente Martinez and Loren Fandos Castellón
- Master's Degree in Computer Graphics, Games and Virtual Reality, URJC University, Madrid
- Bachelor of Fine Arts at the University of Salamanca (specializing in Design and Sculpture)

04

Structure and Content

The syllabus of this Postgraduate Diploma in Model Lighting and 3D Printing, VR, AR and Photogrammetry, is condensed into 3 main sections, which are developed, fully online, throughout the 6 months of the degree, and contains the specific knowledge for the student to develop as a true professional in their field. The first section focuses on the advanced mastery of Blender software, the second on modeling with light, as well as the tools for it, and finally, on the creation of terrains and organic environments, through the application of techniques such as hardsurface.



The material of this Postgraduate Diploma is condensed into 3 main sections, divided into specific areas of knowledge necessary for the student's professional development"

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. 2D Integration
- 1.2.1. Program Adaptation
- 1.2.2. Grease Pencil
- 1.2.3. Combination 2D in 3D

1.3. Modeling Techniques
- 1.3.1. Program Adaptation
- 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. Usage Tips

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. Exports and Imports
- 1.6.3. Final Art

1.7. Sds Max Adaptations to Blender
- 1.7.1. Modeling
- 1.7.2. Texturing and Shading
- 1.7.3. Lighting

1.8. Knowledge of 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 Stages
- 1.9.2. Adjustments and Integrations
- 1.9.3. Exploitation of Functionalities

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

Module 2. Light Modeling

2.1. Offline Arnold Motors
- 2.1.1. Interior and Exterior Lighting
- 2.1.2. Application of Displacement and Normal Maps
- 2.1.3. Render Modifiers

2.2. Vray
- 2.2.1. Lighting Bases
- 2.2.2. Shading
- 2.2.3. Maps

2.3. Advanced Global Illumination Techniques
- 2.3.1. ActiveShade GPU Management
- 2.3.2. Optimization of Photorealistic Rendering 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. Rendering Postproduction
- 2.5.1. Multipass
- 2.5.2. 3D Illustration in ZBrush
- 2.5.3. Multipass in ZBrush

2.6. Integration in Real Spaces
- 2.6.1. Shadow Materials
- 2.6.2. HDRI and Global Illumination
- 2.6.3. Image Tracing

2.7. Unity
- 2.7.1. Interface and Organization
- 2.7.2. Import to Game Engines
- 2.7.3. Materials

2.8. Unreal
- 2.8.1. Interface and Organization
- 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 Storages

2.10. Advanced Lighting Techniques in Videogames
- 2.10.1. Realtime, Pre-calculation of Lights and HDRP
- 2.10.2. Ray Tracing
- 2.10.3. Postprocessing

Module 3. Creation of Organic Soils and Environments

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

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

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

3.4. UnityTerrain
- 3.4.1. Organic Terrain Modeling
- 3.4.2. Ground Painting
- 3.4.3. Creation of Vegetation

3.5. Unreal Terrain
- 3.5.1. Heightmap
- 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 Modeling in Virtual Reality
- 3.9.1. Modeling and Texturing Tips
- 3.9.2. Exploitation of Interaxial Space
- 3.9.3. Project Preparation

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

05

Methodology

This training program provides you with 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"

At TECH we use the Case Method

Our program offers a revolutionary method of skills and knowledge development. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

At TECH you will experience a way of learning that is shaking the foundations of traditional universities around the world"

We are the first online university to combine Harvard Business School case studies with a 100% online learning system based on repetition.

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

A learning method that is different and innovative

This intensive program in Computer Science at TECH Global University prepares you to face all the challenges in this area, both nationally and internationally. We are committed to promoting your personal and professional growth, the best way to strive for success, that is why at TECH Global University you will use Harvard *case studies*, with which we have a strategic agreement that allows us, to offer you material from the best university in the world.

> *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 Computer 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

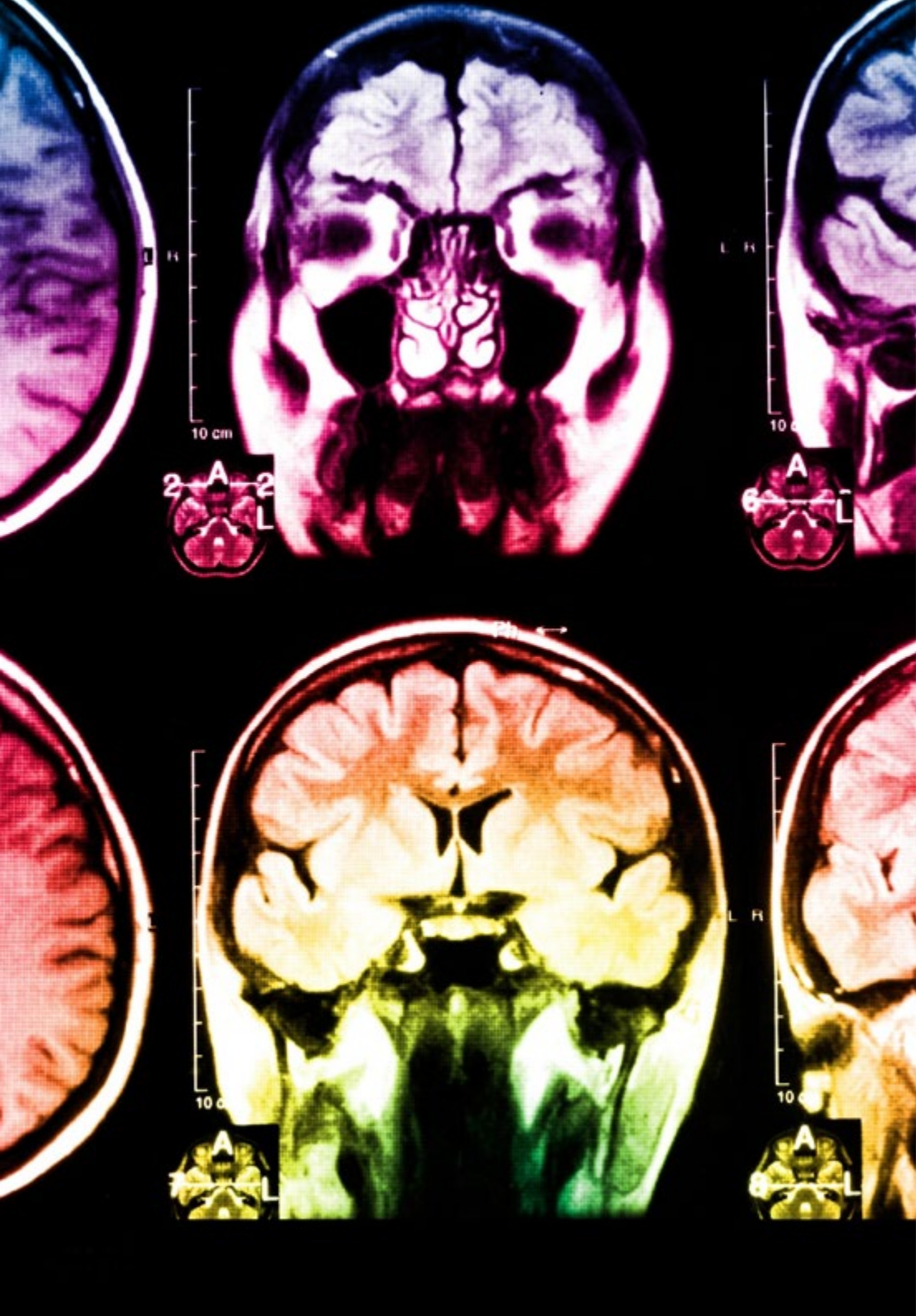
Our university is the first in the world to combine Harvard University *case studies* with a 100%-online learning system based on repetition, which combines different teaching elements in each lesson.

We enhance Harvard *case studies* with the best 100% online teaching method: Relearning.

In 2019 we obtained the best learning results of all Spanish-language 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 Spanish-speaking university qualified 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 Spanish 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.

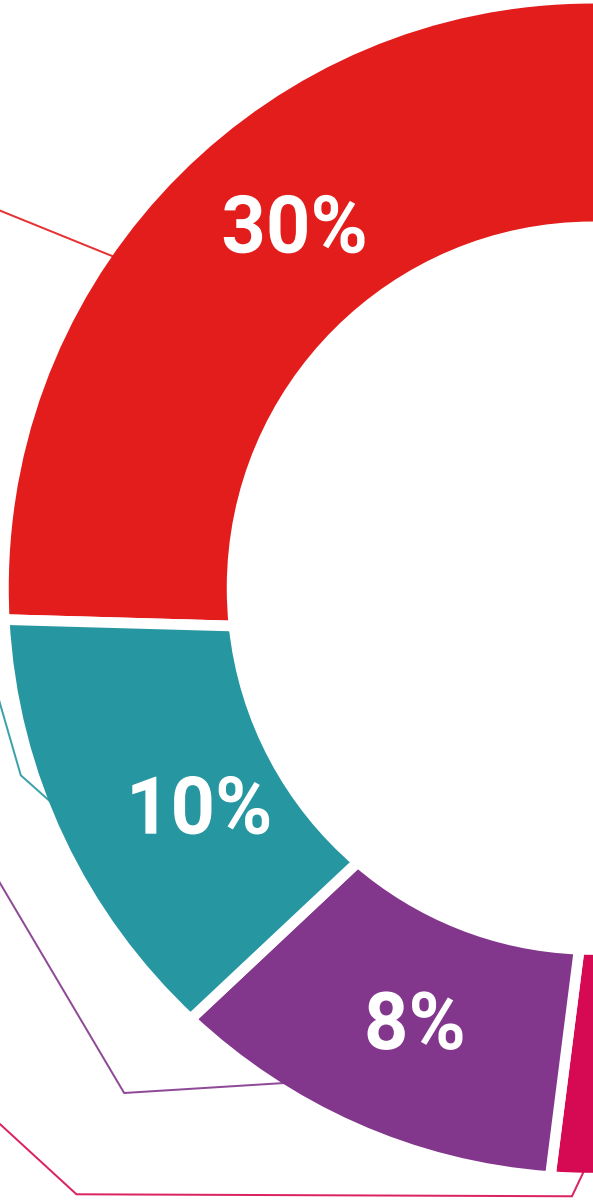
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

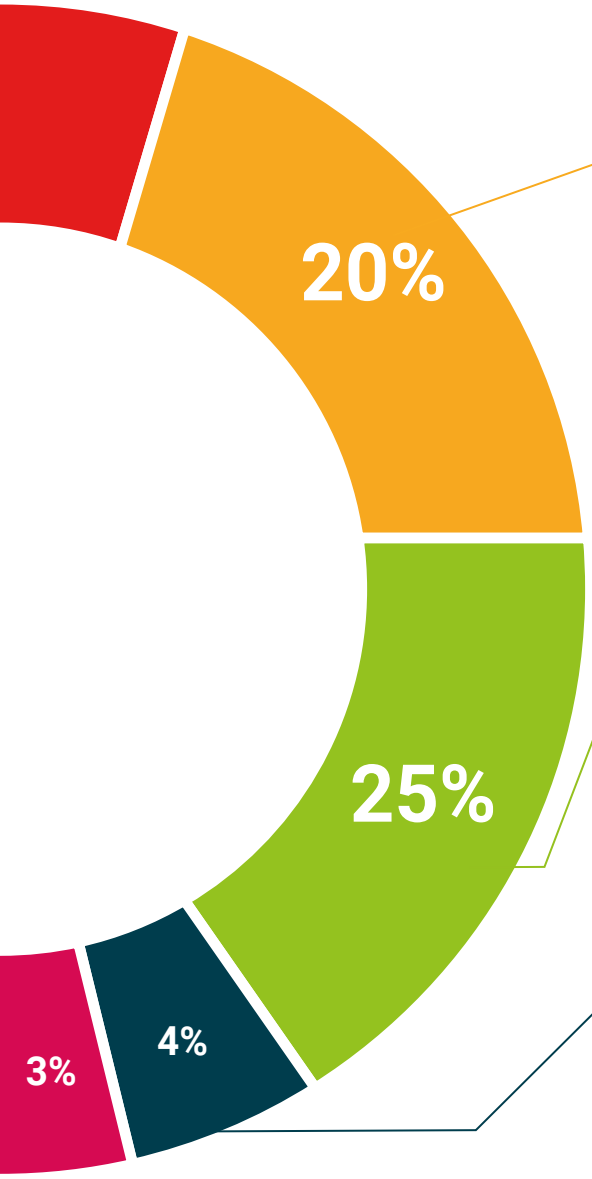
Practising Skills and Abilities

They will carry out activities to develop specific 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 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

They will complete a selection of the best case studies in the field used at Harvard. Cases that are presented, analyzed, and supervised by the best senior management specialists in Latin America.

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 multimedia content presentation training Exclusive system was awarded by Microsoft as a "European Success Story".

Testing & Re-testing

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 your goals.

06

Certificate

The Postgraduate Diploma in in Model Lighting and 3D Printing, VR, AR and Photogrammetry guarantees, in addition to the most rigorous and up-to-date training, access to a Postgraduate Diploma issued by TECH Global University.

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

This program will allow you to obtain your **Postgraduate Diploma in Model Illumination and 3D Printing, VR, AR and Photogrammetry** endorsed by **TECH Global University**, the world's largest online university.

TECH Global University is an official European University publicly recognized by the Government of Andorra (***official bulletin***). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

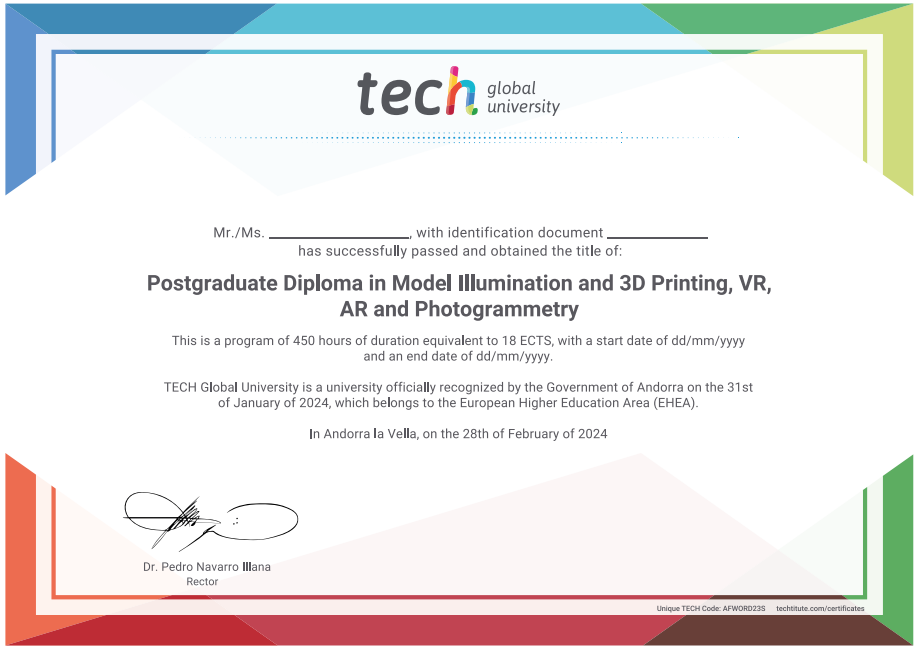
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Diploma in Model Illumination and 3D Printing, VR, AR and Photogrammetry**

Modality: **online**

Duration: **6 months**

Accreditation: **18 ECTS**


tech global university

Mr./Ms. _____, with identification document _____
has successfully passed and obtained the title of:

Postgraduate Diploma in Model Illumination and 3D Printing, VR, AR and Photogrammetry

This is a program of 450 hours of duration equivalent to 18 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024

Dr. Pedro Navarro Illana
Rector

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

tech global university

Postgraduate Diploma

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

- Modality: **online**
- Duration: **6 months**
- Certificate: **TECH Global University**
- Credits: **18 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Postgraduate Diploma

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

tech global university