Postgraduate Diploma

3D Video Game Development and Prototyping

tech *technological university*

Postgraduate Diploma
3D Video Game
Development
and Prototyping

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

Website: **www.techtitute.com/us/videogames/postgraduate-diploma/postgraduate-diploma-3d-video-game-development-prototyping**

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01
Presentation

The experimental handling of development and prototyping tools in 3D video game projects has become a distinctive and highly demanded asset in the audiovisual production industry The possibility of perfectly mastering the most advanced strategies and techniques is not within everyone's reach, or at least it wasn't until TECH decided to create this degree. This is an austere and exhaustive program through which the graduate will acquire specialized knowledge in this field and will perfect his or her professional creative skills. All of this in a convenient 100% online format, with no in-person classes or restricted schedules
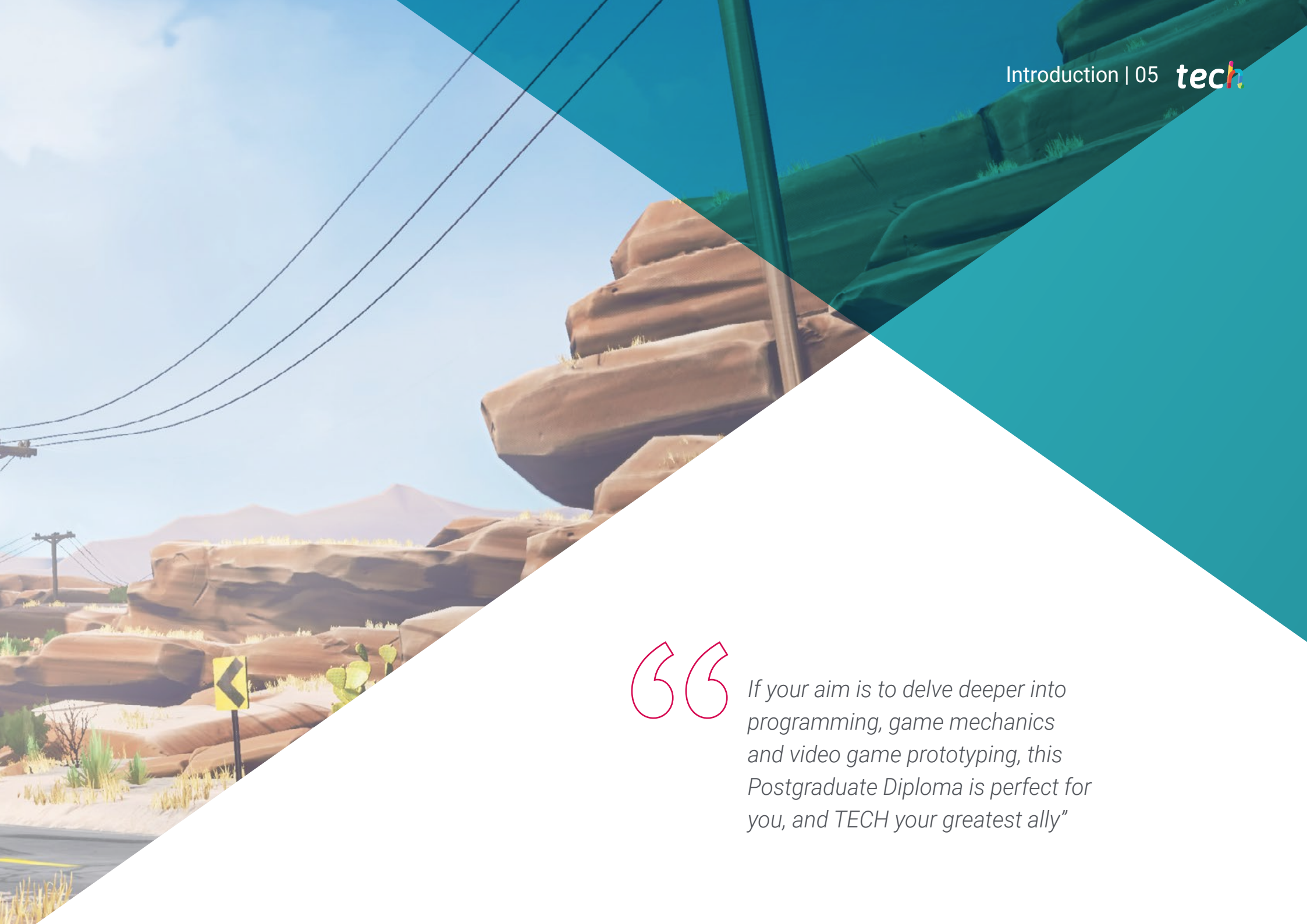
If your aim is to delve deeper into programming, game mechanics and video game prototyping, this Postgraduate Diploma is perfect for you, and TECH your greatest ally"

The 3D video game industry has grown exponentially in recent years, taking advantage of the development of techniques such as virtual reality to create highly immersive and realistic creative experiences based on diverse scenarios, both existing and fantasy products PlayStation, Nintendo or Xbox invest hundreds of thousands of dollars each year into the development of titles that usually end up at the top of highest selling list of games.

For this reason, the role of the professional who masters the techniques and tools for the development and prototyping of projects of this type will have the possibility of building a successful working future For this you can count on this University Expert designed by TECH and a team of experts in the area This program consists of multidisciplinary, exhaustive and dynamic material, through which, the professional will be able to delve into programming, game mechanics, and video game prototyping. It also delves into the keys to VR and the intricacies of professional audio in this type of work

You will have 450 hours of the best theoretical, practical and additional content presented in different formats: detailed videos, self-knowledge exercises, research articles, complementary readings, dynamic summaries and much more! In addition, thanks to its 100% online presentation, the creative will be able to access his studio from wherever he wants and with a schedule totally adapted to his availability.

This **Postgraduate Diploma in 3D Video Game Development and Prototyping** 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

A 100% online program, with which you will work on perfecting your ragdoll creation and simulation skills in a multidisciplinary way"

"

Would you like to delve into the requirements for a successful development? This Postgraduate Diploma will give you the keys to create projects up to the demands of large companies such as Tencent or Ubisoft"

The Postgraduate Diploma includes the simulated creation of a VR Escape Room, so that you can put your professional skills into practice.

In addition, you can access the Virtual Campus from any device with an Internet connection, whether it is a PC, tablet or cell phone.

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.

02
Objectives

Any professional in the video game industry who wants to excel in this field must have a thorough and specialized knowledge of the development and prototyping of animation projects For this reason, and with the aim of facilitating this specialization, TECH has designed this comprehensive program that includes, in addition to the best syllabus, access to the most sophisticated and cutting-edge academic tools It is, therefore, a perfect option to adapt your profile to the demands of the current labor market.

An intuitive and dynamic way to meet your career goals through the program provides a unique academic experience in the marketplace"

General Objectives

- 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
- Develop advanced characters for 3D video games
- Use animation systems and other resources as libraries in professional projects
- Prepare projects for proper export
- Apply acquired knowledge to the VR environment
- Adapting the behavior of video game components to VR
- Integrate the designed and implemented content into a complete playable project

You will exceed your expectations with guaranteed success, handling 3D prototyping and its most advanced tools to perfection"

Specific Objectives

Module 1. 2D and 3D Video Game Development

- 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

Module 2. Programming, Mechanics Generation and Video Game Prototyping Techniques

- Work with Low Poly and High Poly models in professional developments under Unity 3D environment
- Implement advanced functionalities and behaviors in video game characters
- Correctly import character animations into the working environment
- Control Ragdoll systems y skeletal meshes

- Master the available resources such as Asset libraries and functionalities and import them into the project configured by students
- Discover the key points of teamwork for technical professionals involved in 3D programming and animation
- Configure the project to export it correctly and ensure that it works correctly

**Module 3. VR Immersive Game Development**

- Determine the main differences between traditional video games and video games based on VR environments
- Modify interaction systems to adapt to Virtual Reality
- Manage the physics engine to support player actions performed with VR devices
- Apply the development of UI elements to VR
- Integrate the developed 3D models into the VR scenario
- Configure avatars with the appropriate settings for a VR experience
- Optimize the VR project for its correct execution

03
Course Management

The teaching team of this Postgraduate Diploma in 3D Video Game Development and Prototyping has been selected by TECH in order to add a plus of quality to the degree The experience and trajectory that accompanies them makes them ideal to provide this training, basing the agenda not only on the immediate current situation of the video game industry, but also on their own experiences and strategies for success.
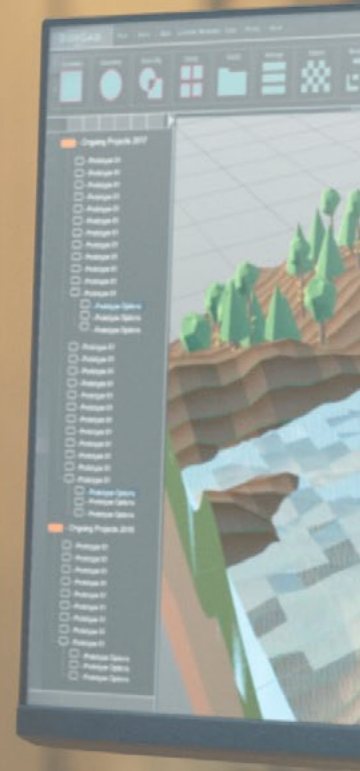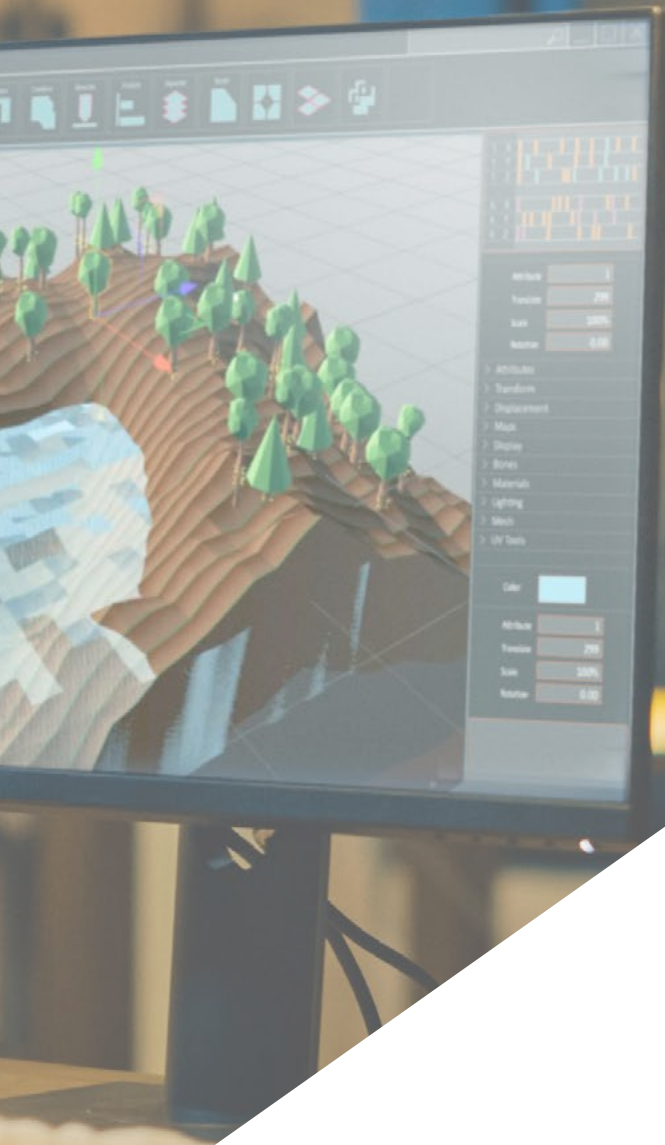
> *In the Virtual Classroom, you will find a forum in which the teaching team will propose current topics to discuss and work on certain aspects of the content in a dynamic and participative way"*

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. Núñez Martín, Daniel

- Music producer specialized in the composition and design of original music for audiovisual media and video games
- Audio designer and music composer at Risin' Goat S.L.
- Sound technician for audiovisual dubbing at SOUNDUB S.A.
- Content creator for the Talentum Master in Video Game Creation at Telefónica Educación Digital
- Higher Technician in Professional Sound Training from the Francisco de Vitoria University
- Intermediate Degree of Official Music Education by the Conservatorio Manuel de Falla, specializing in Piano and Saxophone

### Mr. Ferrer Mas, Miquel

- 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

Structure and Content

The idea of creating complete, comprehensive, dynamic and 100% online degrees arises from the lack of academic offers that adapt to the requirements, demands and novelties of the students Therein lies the success of TECH, in the possibility of taking programs such as this University Expert, highly qualified and with a degree of customization based not only on schedules, but also on the level of deepening that graduates can do.
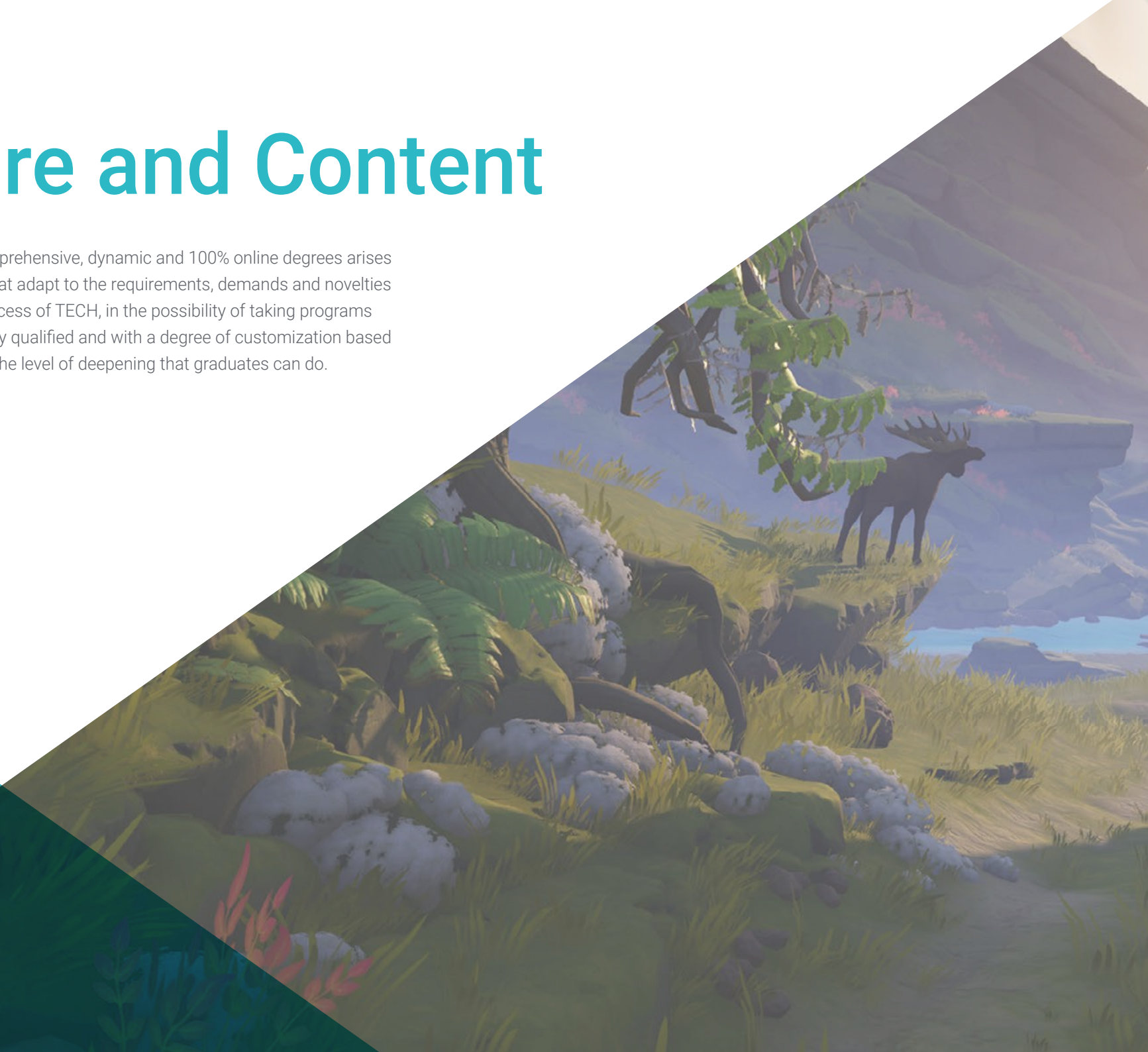
Having a cost-saving guide for development will help you create more productive projects with a higher profit margin"

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 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

Module 2. Programming, Mechanics Generation and Video Game Prototyping Techniques

2.1. Technical Process
    2.1.1. Low-Poly and High-Poly Models in Unity
    2.1.2. Material Settings
    2.1.3. High-Definition Render Pipeline
2.2. Character Design
    2.2.1. Movement
    2.2.2. Collider Design
    2.2.3. Creation and Behavior
2.3. Importing Skeletal Meshes into Unity
    2.3.1. Exporting Skeletal Meshes from 3D Software
    2.3.2. Skeletal Meshes in Unity
    2.3.3. Anchor Points for Accessories

Module 3. VR Immersive Game Development

3.1. Uniqueness of VR
    3.1.1. Traditional Video Games and VR. Differences
    3.1.2. Motion Sickness: Smoothness vs. Effects
    3.1.3. Unique VR Interactions

3.2. Interaction
    3.2.1. Events
    3.2.2. Physical Triggers
    3.2.3. Virtual World vs. Real World

3.3. Immersive Locomotion
    3.3.1. Teletransportation
    3.3.2. Arm Swinging
    3.3.3. Forward Movement With and Without Facing

3.4. VR Physics
    3.4.1. Grabbable and Throwable Objects
    3.4.2. Weight and Mass in VR
    3.4.3. Gravity in VR

3.5. UI in VR
    3.5.1. Positioning and Curvature of UI Elements
    3.5.2. VR Menu Interaction Modes
    3.5.3. Best Practices for Comfortable Experiences

3.6. VR Animation
    3.6.1. Animated Model Integration in VR
    3.6.2. Animated Objects and Characters vs. Physical Objects
    3.6.3. Animated vs. Procedural Transitions

Don't think twice: enroll now in this Postgraduate Diploma and give your professional career the boost it needs to become one of the best professionals in the 3D video game development sector"

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.

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.

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

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.

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.

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.

30%

10%

8%

tech

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.

06
Certificate

The Postgraduate Diploma in of both 3D and Prototyping Development guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma 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 3D Video Game Development and Prototyping** 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 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 3D Video Game Development and Prototyping**

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 DIPLOMA
in

3D Video Game Development and Prototyping

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.

Postgraduate Diploma
3D Video Game Development and Prototyping

- » Modality: **online**
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- » Exams: **online**

Postgraduate Diploma

3D Video Game Development and Prototyping

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