Postgraduate Diploma
3D Video Game Development and Prototyping

tech technological university

Postgraduate Diploma
3D Video Game Development and Prototyping

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

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

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01
Introduction

Prototyping in the creative process should be carried out with care and thoroughness to avoid possible mistakes in the future and to save time when undertaking the creation of a project. The same happens in the field of 3D video games , so TECH has considered it necessary to develop a program that contemplates the most effective strategies to achieve optimal results through programming, the generation of mechanics and the most advanced prototyping techniques. Therefore, this is a unique opportunity through which, in just 6 months and 100% online, you will be able to perfect your skills and adapt your professional profile to the labor demand of the current audiovisual market.

Do you want to be part of the select group of professionals that nowadays manage the development of immersive the development of immersive video games in VR? Enroll in this Postgraduate Diploma and get it"

Prototyping is a crucial phase in the design process, regardless of the format in which you are working. Regardless of the format in which you are going to work, it serves to put ideas in order, plan the process and establish solutions, as well as to anticipate possible errors that may arise. For that reason, professionals who want to focus their careers on 3D video game development must understand that the same is true in this field, which requires specialized knowledge that allows them to work safely and conscientiously at all times.

For that reason, and taking into account the increase in demand that has occurred for creatives who master the techniques and strategies of this field, TECH has developed a perfect program to help the professional to achieve it. This program is directed by experts in the field and presented in a practical and accessible 100% online format.

Through 450 hours of the best theoretical, practical and additional content selected based on the latest developments in the industry, the syllabus provides an exhaustive overview of the ins and outs of 2D and 3D video game development, as well as the keys to programming, mechanics generation and prototyping techniques. Lastly, it places special emphasis on the development of immersive titles in VR.

The graduate will have up to 6 months to pass the program criteria, and will have unlimited access to the Virtual Campus. Besides the syllabus, you will find detailed videos, research articles, complementary readings, self-knowledge exercises and dynamic summaries of each unit so that you can get the most out of an academic experience that will set a milestone in your career.

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

You will work with Lowpoly and Highpoly models applicable to a 3D experience through polygon wiggling"

A program designed to perfect your knowledge of physics applicable to grippable and throwable objects in VR and immersive video games.

"You will have 450 hours of the best theoretical, practical and additional content and 6 months to enjoy it without limits, from anywhere and with a schedule fully adapted to your availability. to your availability"

You will be able to access the virtual campus from any device with an internet connection, whether it is a mobile, tablet or cell PC.

The program's teaching staff includes professionals from sector who contribute their work experience to this 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.
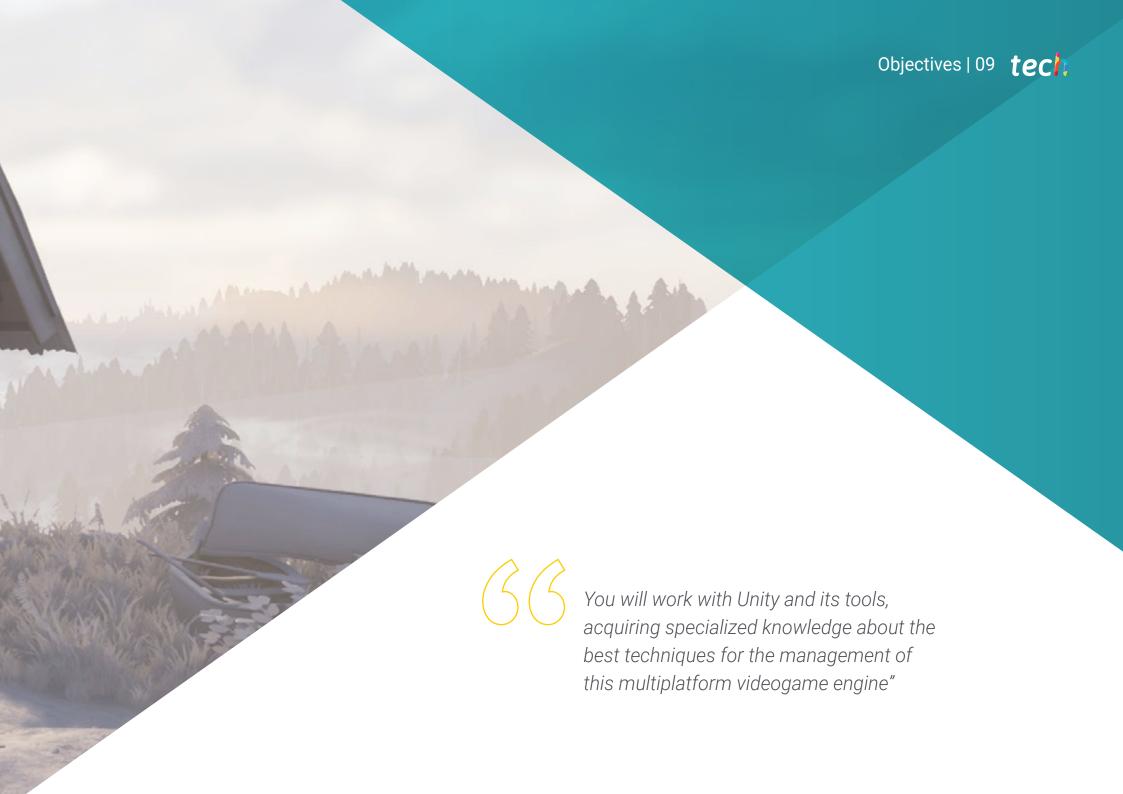
This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the academic year This will be done with the help of an innovative system of interactive videos made by renowned experts.

02
Objectives

The completeness required by prototyping processes and the need, on the part of professionals in this area, to have a series of specialized knowledge to be able to carry them out, has motivated the launch of this program. For this reason, TECH aims to provide design specialists with the keys to master the most avant-garde techniques in this field, as well as the most complex and accurate creative tools.

You will work with Unity and its tools, acquiring specialized knowledge about the best techniques for the management of this multiplatform videogame engine"

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

Are you looking for a program that delves into the requirements for creative development and successful production? So, you are in front of the best option to achieve it"

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 models *Lowpoly* and *Highpoly* 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* and *Skeletal Meshes*
- Master the available resources such as libraries of *Assets* and functionalities and import them into the project configured by the student
- 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
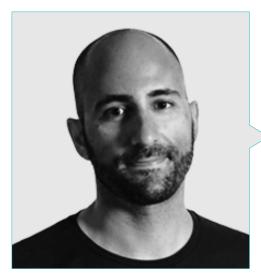
Module 3. VR Immersive Game Development

- 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

In any academic experience, having a teaching team specialized in the area can significantly help the graduate to get the most out of it. For this reason, TECH puts a lot of effort in the conformation of its cloisters and as a result it is possible to offer one like the one presented by this Postgraduate Diploma, conducted by experts in design. Moreover, they are professionals with an exceptional human quality, something that they will demonstrate in the individualized tutorials that students may request.

"

The faculty has been selected for its resume and human qualities. So if you join this program you will have the support of real specialists concerned with your professional growth"

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

- Producer at Cateffects S.L.
- 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

- 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

All the programs offered by TECH are composed of three fundamental pillars: the most exhaustive and updated information, selected by the teaching team, the best additional material presented in different formats and case studies based on simulations of real situations. In this way and through the program of any program of this university, the graduate can not only expand and update their knowledge, but also improve their skills through active and immersive work to solve challenging problems.

" *Apart from the visual section, you will also work on soundtrack design for video games, knowing in detail the main techniques and tools to achieve promising results"*

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. *RenderPass* Types
    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* Unity Models
    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

2.4. Importing Animations
    2.4.1. Animation Preparation
    2.4.2. Importing Animations
    2.4.3. *Animator* and Transitions

2.5. Animation Editor
    2.5.1. *Blend Spaces* Creation
    2.5.2. *Animation Montage* Creation
    2.5.3. Editing *Read-Only* Animations

2.6. *Ragdoll* Creation and Simulation
    2.6.1. *Ragdoll* Configuration
    2.6.2. *Ragdoll* to an Animation Graph
    2.6.3. *Ragdoll* Simulation

Module 3. VR Immersive Game Development

TECH has the best program to learn the keys to optimize virtual and augmented reality projects and you are just one step away from accessing it. Don't let it pass you by"

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"
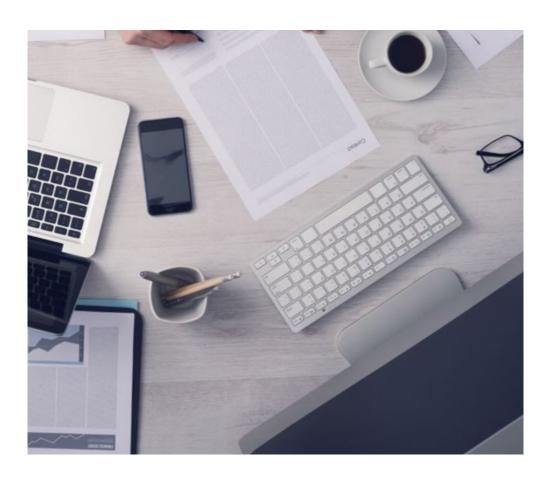
Case Study to contextualize all content

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 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.

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. 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.

30%

10%

8%

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.

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 scientific 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 certificate 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
CERTIFICATE
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 certificate issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

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