

# Postgraduate Diploma Level Design for Video Games





## Postgraduate Diploma Level Design for Video Games

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

Website: [www.techtitute.com/us/videogames/postgraduate-diploma/postgraduate-diploma-level-design-video-games](http://www.techtitute.com/us/videogames/postgraduate-diploma/postgraduate-diploma-level-design-video-games)

# Index

01

Introduction

---

*p. 4*

02

Objectives

---

*p. 8*

03

Structure and Content

---

*p. 12*

04

Methodology

---

*p. 18*

05

Certificate

---

*p. 26*

# 01

# Introduction

Level design is one of the phases of video game creation that is surrounded by mystery, so very few programmers dare to explore it. The truth is that it represents a combination of science and art, requiring the specialist to develop empathy for the player in order to manipulate their emotions at each level. Because of this growing demand for skills, this program has been developed, which will provide students with all the knowledge they need to determine the internal structure of a Video Game engine.



“

*The ideal is to create puzzles that become a challenge for the users, maintaining their attention on completing the game”*



The level designer is a key position in a project, as it can make a game exciting or disappoint the audience. Therefore, it is necessary to understand the dynamics of the player, who does not want to spend long hours trying to solve the puzzles to advance to the next level. In this way, the level designer becomes a key player in finding the balance between a stimulating and a boring challenge.

Thinking about how important it is to sustain the user's attention in the game, the following program has been elaborated to help students to determine the internal structure of the Video Games they play. To do so, they will learn how to perform 3D modeling, following the appropriate programming code. In addition, a study of the design process will be carried out, in which the interface of the games and the user evaluation methods will be evaluated.

On the other hand, you will discover the operation and basic features of game engines, such as Gamer Maker, which is a software based on an interpreted programming language to create video games. We will also study Unreal Engine 4, one of the most used platforms worldwide for the creation of realistic and innovative games.

Finally, human-computer interaction will be explored, analyzing accessibility guidelines, the standards that establish them and the tools that help to evaluate them. This will allow us to understand the importance of application usability and the different types of human diversity.

This **Postgraduate Diploma in Level Design for Video Games** contains the most complete and up-to-date program on the market. The most important features include:

- ◆ Practical cases presented by experts in Video Game Narrative
- ◆ 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 the self-assessment process can be carried out to improve learning
- ◆ 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



*Develop your empathy for the user so that they enjoy the experience of participating in a game that stimulates their competitive skills”*

“

*Learn the process of interface design, from requirements analysis to evaluation”*

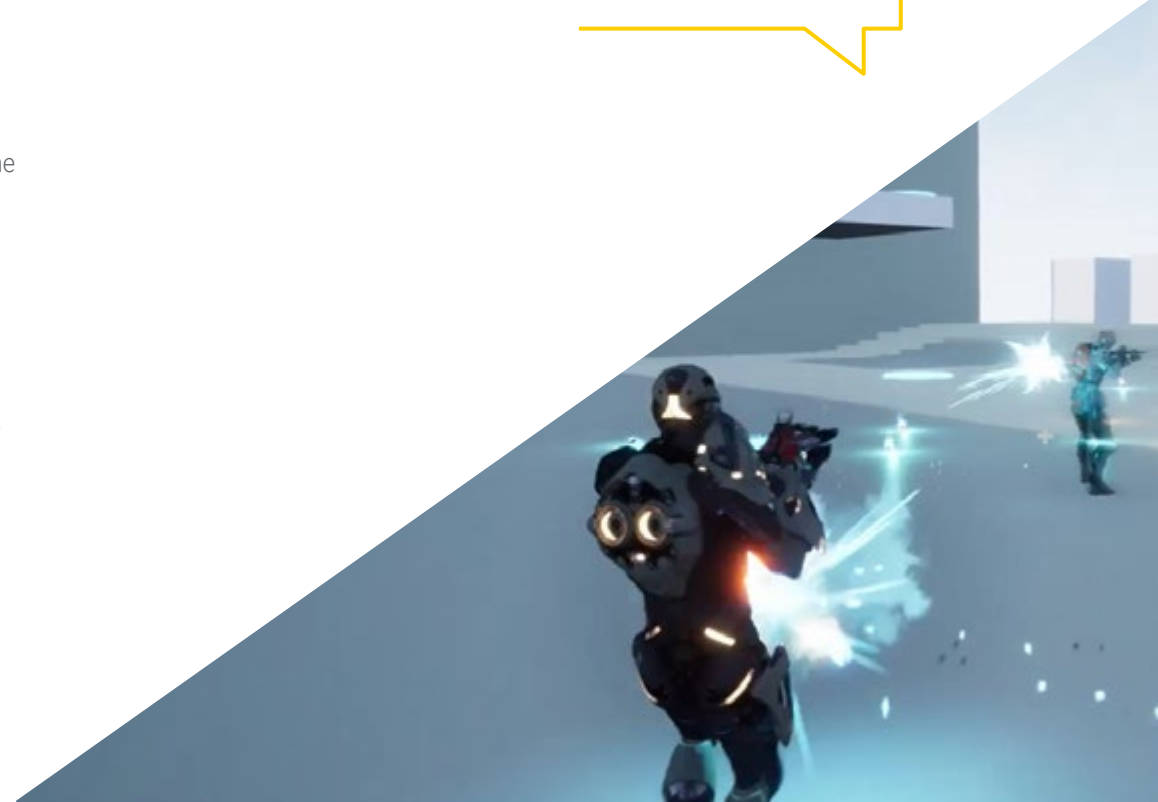
The teaching staff of this program includes professionals from the industry, who contribute the experience of their work to this program, in addition to recognized specialists from reference societies and prestigious universities.

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 learning 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 throughout the program. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

*Correctly and efficiently program applications applied to video game engines.*

*Understand the functions of each component of a video game in order to develop new ones.*

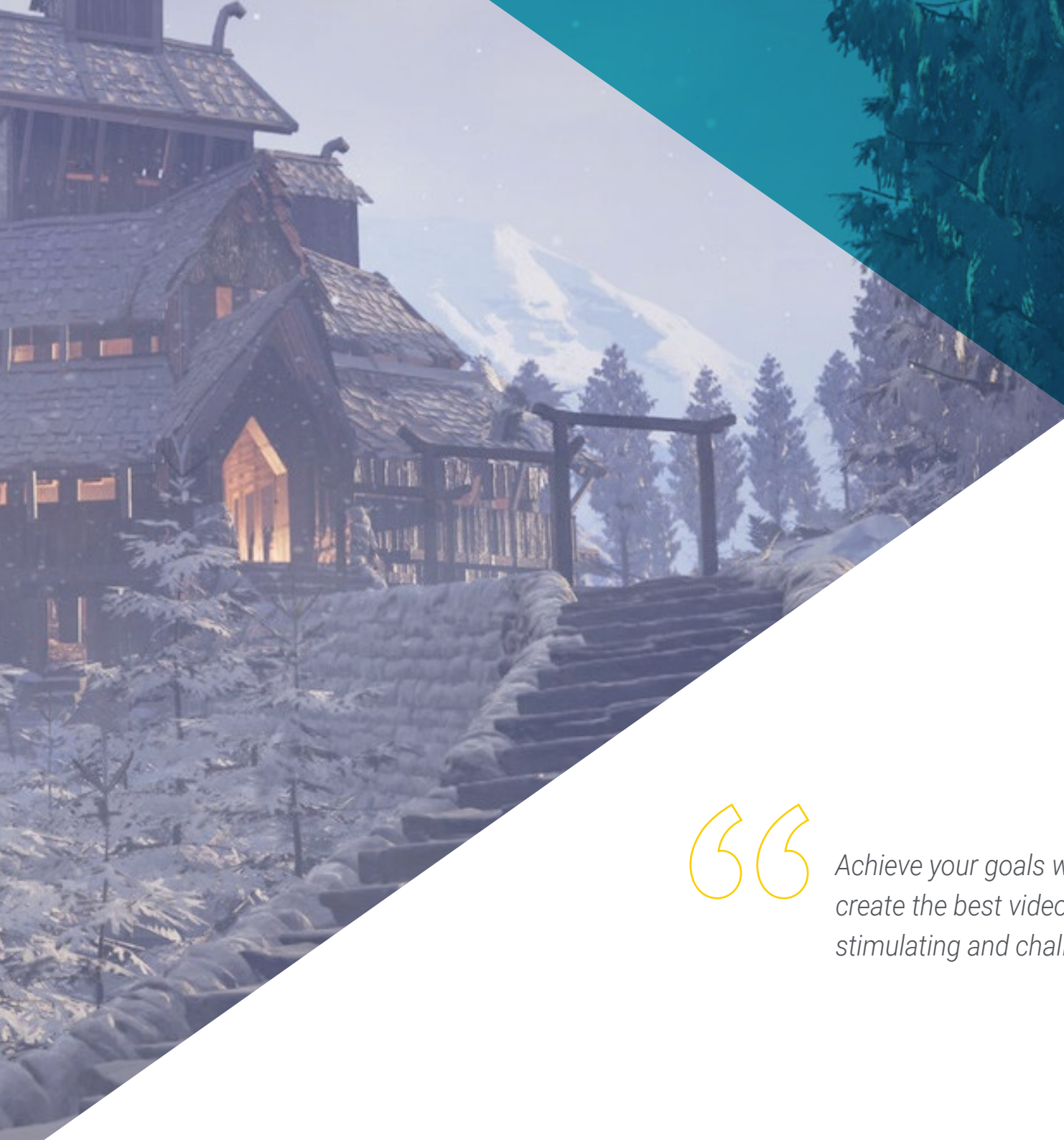


# 02 Objectives

The objective of this Postgraduate Diploma will focus on helping students understand the processes involved in creating and designing the levels of a video game. To do this, they must learn skills in 3D modeling and the operation of different game engines, choosing the one that best suits the needs of the project. All of this will be essential for the student to become a true specialist and create the next global success.







“

*Achieve your goals with this Postgraduate Diploma and create the best video game in the world, developing stimulating and challenging levels for users”*



## General Objectives

---

- ◆ Understand the different elements that make up a story
- ◆ Apply narrative structure to the video game format
- ◆ Explore, in depth, the process of script writing and storyboard for a video game, differentiating between all the stages involved
- ◆ Analyze the key components and concepts that should be found in a script
- ◆ Study the narrative fundamentals and the hero's journey as one of the main forms of narration
- ◆ Examine storyboarding and animatics, highlighting their importance within the scripting process
- ◆ Know the different genres and existing narratives in the world of video games
- ◆ Learn to develop effective dialogue through the script



*Develops and create the interface of a video game, solving all the problems in an ingenious way"*







## Specific Objectives

---

### Module 1. 3D Modeling

- ◆ Ascertain the internal structure of a video game engine
- ◆ Establish the elements of a modern video game architecture
- ◆ Understand the functions of each one of the video game components
- ◆ Examine examples of video games made with 2D and 3D graphics

### Module 2. Video Game Engines

- ◆ Discover video game engine operation and architecture
- ◆ Understand the basic features of existing game engines
- ◆ Correctly and efficiently program applications applied to video game engines
- ◆ Choose the most appropriate paradigm and programming languages to program applications applied to video game engines

### Module 3. Human-Computer Interaction

- ◆ Explore the different accessibility guidelines, the standards that establish them and the tools to evaluate them, as well as the different methods of interaction with the computer, through peripherals and devices
- ◆ Understand the importance of application usability and the different types of human diversity, the limitations they imply and how to adapt interfaces according to the specific needs of each of them
- ◆ Learn the process of interface design, from requirements analysis to evaluation
- ◆ Go through the various intermediate steps necessary to make a proper interface

# 03

## Structure and Content

The Postgraduate Diploma in Level Design for Videogames has a syllabus that gathers all the fundamental contents to establish the internal architecture of a game. In this way, the student will receive, in a theoretical and practical way, knowledge endorsed by the needs of the sector. In this sense, they will understand how to do 3D modeling, the operation of the most used Video Game engines in the market and finally, and the tools that allow for the evaluation of the different ways in which people interact with the computer.







“


*It's the best time to learn how Unreal Engine 4, the most widely-used game engine worldwide, works”*

## Module 1. 3D Modeling

- 1.1. Introduction to C#
  - 1.1.1. What is OOP?
  - 1.1.2. Visual Studio Environment
  - 1.1.3. Types of Data
  - 1.1.4. Type Conversions
  - 1.1.5. Conditionals
  - 1.1.6. Objects and Classes
  - 1.1.7. Modularity and Encapsulation
  - 1.1.8. Heritage
  - 1.1.9. Abstract Classes
  - 1.1.10. Polymorphism
- 1.2. Fundamentals of Mathematics
  - 1.2.1. Mathematical Tools in Physics: Scalar and Vector Quantities
  - 1.2.2. Mathematical Tools in Physics: Scalar Product
  - 1.2.3. Mathematical Tools in Physics: Vector Product
  - 1.2.4. Mathematics Tools in OOP
- 1.3. Physical Principles
  - 1.3.1. Rigid Solids
  - 1.3.2. Kinematics
  - 1.3.3. Dynamics
  - 1.3.4. Collisions
  - 1.3.5. Projectiles
  - 1.3.6. Flying
- 1.4. Fundamentals of Computer Graphics
  - 1.4.1. Graphics Systems
  - 1.4.2. 2D Graphics
  - 1.4.3. 3D Graphics
  - 1.4.4. Raster Systems
  - 1.4.5. Geometric Modeling
  - 1.4.6. Elimination of Hidden Parts
  - 1.4.7. Realistic Visualization
  - 1.4.8. OpenGL Graphics Library





- 
- 1.5. Unity: Introduction and Installation
    - 1.5.1. What Is Unity?
    - 1.5.2. Why Unity?
    - 1.5.3. Features of Unity
    - 1.5.4. Installation
  - 1.6. Unity: 2D and 3D
    - 1.6.1. 2D Gameplay: Sprites and Tilemaps
    - 1.6.2. 2D Gameplay: 2D Physics
    - 1.6.3. Unity 2D Video Game Examples
    - 1.6.4. Introduction to Unity 3D
  - 1.7. Unity: Instantiation and Object Creation
    - 1.7.1. Adding Components
    - 1.7.2. Deleting Components
    - 1.7.3. Importing Assets and Textures
    - 1.7.4. Supplies and Maps for Materials
  - 1.8. Unity: Interactions and Physics
    - 1.8.1. Rigidbody
    - 1.8.2. Colliders
    - 1.8.3. Joints
    - 1.8.4. Character Controllers
    - 1.8.5. Continuous Collision Detection (CCD)
    - 1.8.6. Physics Debug Visualization
  - 1.9. Unity: Basic Artificial Intelligence (AI) for NPCs
    - 1.9.1. Pathfinding in Unity: Navmesh
    - 1.9.2. AI Enemies
    - 1.9.3. NPC Action Tree
    - 1.9.4. NPC Hierarchy and Scripts
  - 1.10. Unity: Animation Fundamentals and Implementation
    - 1.10.1. Animation Controller: Character Association
    - 1.10.2. Blend Tree: Combination Tree
    - 1.10.3. State Transitions
    - 1.10.4. Transition Threshold Modification

## Module 2. Video Game Engines

- 2.1. Video Games and Information Communication Technologies (ICTs)
  - 2.1.1. Introduction
  - 2.1.2. Opportunities
  - 2.1.3. Challenges
  - 2.1.4. Conclusions
- 2.2. History of Video Game Engines
  - 2.2.1. Introduction
  - 2.2.2. Atari
  - 2.2.3. The 80s
  - 2.2.4. First Engines. The 90s
  - 2.2.5. Current Engines
- 2.3. Video Game Engines
  - 2.3.1. Types of Engines
  - 2.3.2. Video Game Engine Parts
  - 2.3.3. Current Engines
  - 2.3.4. Selecting an Engine for Our Project
- 2.4. Motor Game Maker
  - 2.4.1. Introduction
  - 2.4.2. Scenarios Design
  - 2.4.3. Sprites and Animations
  - 2.4.4. Collisions
  - 2.4.5. Scripting in Game Maker Languages (GML)
- 2.5. Unreal Engine 4: Introduction
  - 2.5.1. What Is Unreal Engine 4? What Is Its Philosophy?
  - 2.5.2. Materials
  - 2.5.3. UI
  - 2.5.4. Animations
  - 2.5.5. Particle Systems
  - 2.5.6. Artificial Intelligence
  - 2.5.7. Frames Per Second (FPS)
- 2.6. Unreal Engine 4: Visual Scripting
  - 2.6.1. Blueprints and Visual Scripting Philosophy
  - 2.6.2. Debugging
  - 2.6.3. Types of Variables
  - 2.6.4. Basic Flow Control
- 2.7. Unity 5 Engine
  - 2.7.1. C# y Visual Studio Programming
  - 2.7.2. Creating Prefabs
  - 2.7.3. Using Gizmos to Control Video Games
  - 2.7.4. Adaptive Engine: 2D and 3D
- 2.8. Godot Engine
  - 2.8.1. Godot Design Philosophy
  - 2.8.2. Object- and Composition-Oriented Design
  - 2.8.3. All in One Package
  - 2.8.4. Open and Community-Driven Software
- 2.9. RPG Maker Engine
  - 2.9.1. RPG Maker Philosophy
  - 2.9.2. Taking as a Reference
  - 2.9.3. Creating a Game with Personality
  - 2.9.4. Commercially Successful Games
- 2.10. Source 2 Engine
  - 2.10.1. Source 2 Philosophy
  - 2.10.2. Source and Source 2: Evolution
  - 2.10.3. Use of the Community: Audiovisual Content and Video Games
  - 2.10.4. Future of Source 2 Engine
  - 2.10.5. Successful Mods and Games



### Module 3. Human-Computer Interaction

- 3.1. Introduction to Human-Computer Interaction
  - 3.1.1. What is Human-Computer Interaction?
  - 3.1.2. Relationship Between Human-Computer Interaction and Other Disciplines
  - 3.1.3. User Interface
  - 3.1.4. Usability and Accessibility
  - 3.1.5. User Experience and User-Focused Design Methodology
- 3.2. Computer and Interaction: User Interface and Interaction Paradigms
  - 3.2.1. Interaction
  - 3.2.2. Paradigms and Styles of Interaction
  - 3.2.3. Evolution of User Interfaces
  - 3.2.4. Classic User Interfaces: WIMP/GUI, Commands, Voice, Virtual Reality
  - 3.2.5. Innovative User Interfaces: Mobiles, Laptops, Collaborative, BCI
- 3.3. The Human Factor: Psychological and Cognitive Aspects
  - 3.3.1. The Importance of the Human Factor in Interaction
  - 3.3.2. Human Information Processing
  - 3.3.3. The Input and Output of Information: Visual, Audio and Tactile
  - 3.3.4. Perception and Attention
  - 3.3.5. Knowledge and Mental Models: Representation, Organization and Acquisition
- 3.4. The Human Factor: Sensory and Physical Limitations
  - 3.4.1. Functional Diversity, Disability and Deficiency
  - 3.4.2. Visual Diversity
  - 3.4.3. Audio Diversity
  - 3.4.4. Cognitive Diversity
  - 3.4.5. Motor Diversity
  - 3.4.6. The Case of Digital Immigrants
- 3.5. Design Process (I): Requirements Analysis for the User Interface Design
  - 3.5.1. User-Centered Design
  - 3.5.2. What is Requirements Analysis?
  - 3.5.3. Collection of Information
  - 3.5.4. Analysis and Interpretation of Information
  - 3.5.5. Usability and Accessibility Analysis
- 3.6. Design Process (II): Prototype and Task Analysis
  - 3.6.1. Conceptual Design
  - 3.6.2. Prototyping
  - 3.6.3. Hierarchic Task Analysis
- 3.7. Design Process (III): The Evaluation
  - 3.7.1. Evaluation in the Design Process: Objectives and Methods
  - 3.7.2. Evaluation Methods Without Users
  - 3.7.3. Evaluation Methods With Users
  - 3.7.4. Evaluation Standards and Rules
- 3.8. Accessibility: Definition and Steps
  - 3.8.1. Universal Accessibility and Design
  - 3.8.2. WAI Initiative and WCAG Steps
  - 3.8.3. WCAG 2.0 and 2.1
- 3.9. Accessibility: Evaluation and Functional Diversity
  - 3.9.1. Web Site Accessibility Evaluation Tools
  - 3.9.2. Accessibility and Functional Diversity
- 3.10. The Computer and Interaction: Peripherals and Devices
  - 3.10.1. Traditional Peripherals and Devices
  - 3.10.2. Alternative Peripherals and Devices
  - 3.10.3. Mobiles and Tablets
  - 3.10.4. Functional Diversity, Interaction and Peripherals



*Level design is one of the most important phases in the development of a video game. Learn how to create stimulating challenges for players by completing this Postgraduate Diploma”*

# 04

# 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 has been the most widely used learning system among the world's leading business schools for as long as they have existed. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question that you are presented with in the case method, an action-oriented learning method. Over the course of 4 years, you will be presented with multiple practical case studies. You will have to combine all your knowledge, and research, argue, and defend your ideas and decisions.

## Relearning Methodology

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

We enhance the Case Study with the best 100% online teaching method: Relearning.

*In 2019, we obtained the best learning results of all online universities in the world.*

At TECH you will learn using a cutting-edge methodology designed to train the executives of the future. This method, at the forefront of international teaching, is called Relearning.

Our university is the only one in the world authorized to employ this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.



In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

This methodology has trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, and financial markets and instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

*Relearning will allow you to learn with less effort and better performance, involving you more in your training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for success.*

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images and memories, but we know that the place and context where we have learned something is fundamental for us to be able to remember it and store it in the hippocampus, to retain it in our long-term memory.

In this way, and in what is called neurocognitive context-dependent e-learning, the different elements in our program are connected to the context where the individual carries out their professional activity.



This program offers the best educational material, prepared with professionals in mind:



### Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



### Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

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



### Practising Skills and Abilities

They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization we live in.



### Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.







#### Case Studies

Students will complete a selection of the best case studies chosen specifically for this program. Cases that are presented, analyzed, and supervised by the best specialists in the world.



#### Interactive Summaries

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.



# 05 Certificate

The Postgraduate Certificate in Level Design for Video Games guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.



“

*Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork”*



This **Postgraduate Diploma in Level Design for Video Games** contains the most complete and up-to-date academic 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 Certificate, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Diploma in Level Design for Video Games**

Official N° of Hours: **450 h.**



\*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

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



## Postgraduate Diploma Level Design for Video Games

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

# Postgraduate Diploma Level Design for Video Games

