

Postgraduate Diploma Video Game Programming Management



Postgraduate Diploma Video Game Programming Management

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

Website: www.techtute.com/us/videogames/postgraduate-diploma/postgraduate-diploma-video-game-programming-management

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

Video game programming is a highly specific field that requires considerably extensive and specialized knowledge. It is insufficient to know the essential fundamentals of the discipline, since the field of video games is significantly different from that of other sectors. That is why managing video game programming teams is an endeavor that requires adequate preparation. This course offers students the best tools in programming management so they can respond to the different challenges that may arise in the development of a successful video game.





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*Manage high-level programming teams
thanks to this Postgraduate Diploma”*

Although it is an industry that shares many similarities with others in the audiovisual and digital field, video games have a lot of specificities that have established a niche at the professional level. This has resulted in the various professionals across the industry needing further training focused on this particular area to be able to succeed, since there are numerous details that are not immediately extrapolated from other nearby disciplines.

That is why it is essential to receive training and gain knowledge on video games in every position in the company, which is especially relevant when it comes to programming.

Programming is at the core of any video game, and its success depends on it, for it is the backbone of the most basic and more complex elements involved, such as gameplay, general operation and graphics integration, among other things

The Postgraduate Diploma in Video Game Programming Management is the key for all professionals who wish to work in the industry and become valued programmers by the best video game companies in the world.

This **Postgraduate Diploma in Video Game Programming Management** 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 programming management
- ◆ The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- ◆ Practical exercises where self-assessment can be used to improve learning
- ◆ Its special emphasis on innovative methodologies
- ◆ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ◆ Content that is accessible from any fixed or portable device with an Internet connection



Program high-quality video games with this course"



Major video game companies need programming management experts to manage their projects”

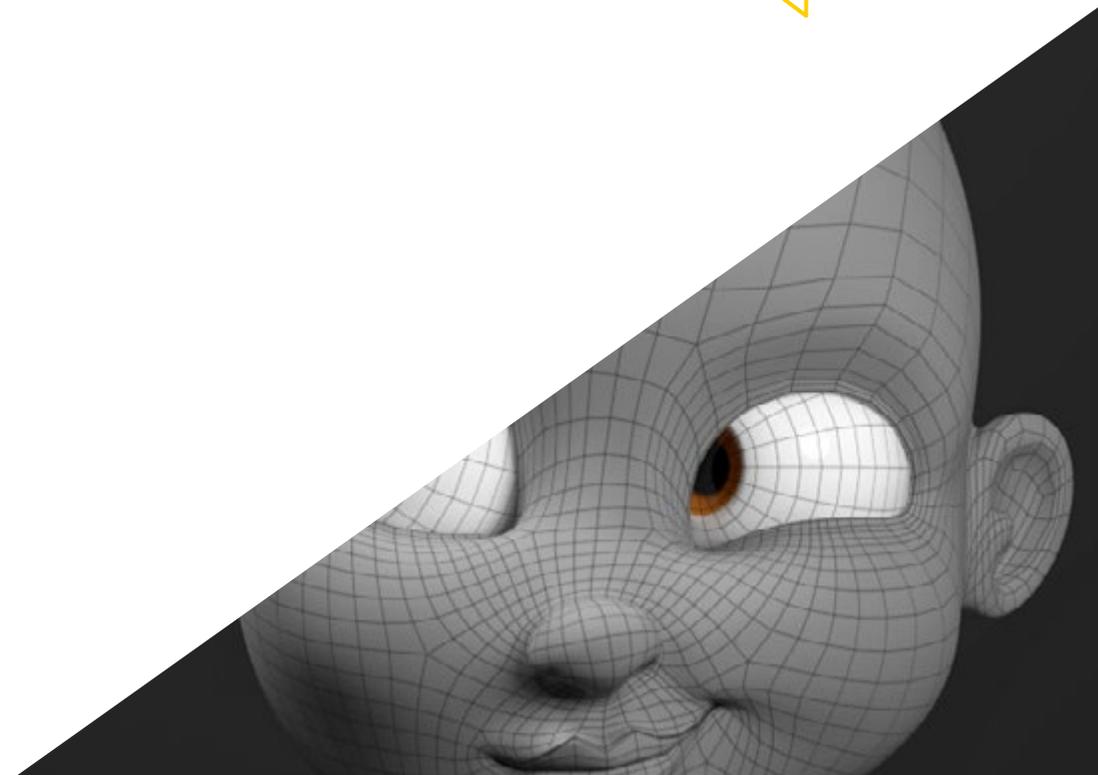
The program’s teaching staff includes professionals from sector who contribute their work experience to this training program, as well as renowned specialists from leading societies and prestigious universities.

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 specialization 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.

Learn to manage video game programming for a successful title with this educational program.

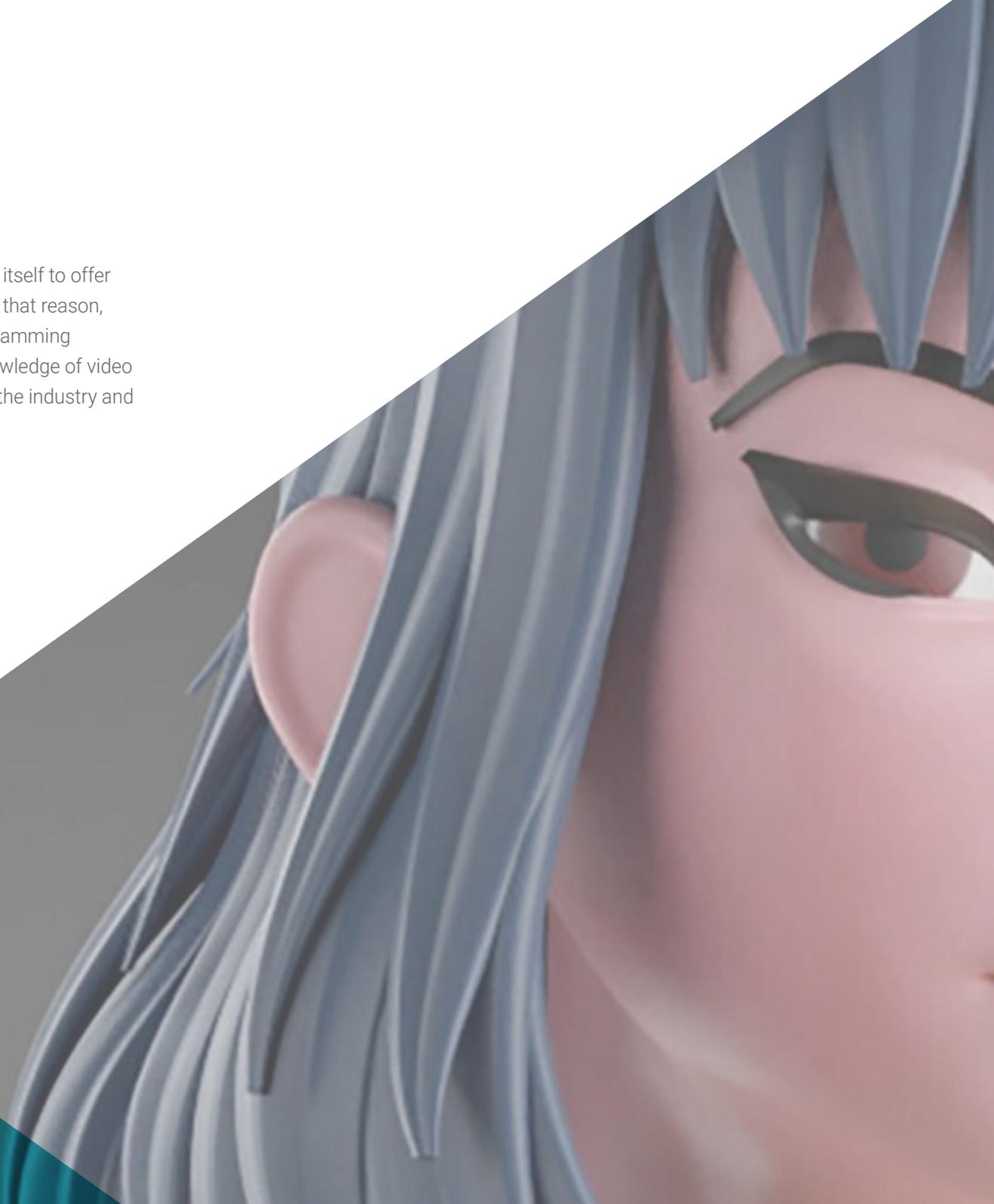
The video game industry needs great programming specialists. You could be one of them.



02

Objectives

TECH wants its students to achieve their dreams, so it has taken it upon itself to offer the best education, so they learn everything they need to fulfill them. For that reason, the primary objective of this Postgraduate Diploma in Video Game Programming Management is to offer students the most innovative and advanced knowledge of video game development, so they can access the most renowned companies in the industry and participate in the creation of the most successful titles of the future.





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*Achieve all your goals in the field
of video games thanks to TECH
Global University”*



General Objectives

- ◆ Become familiar the different programming languages and methods used in video games
- ◆ Delve into video game production processes and integrating programming into these stages
- ◆ Acquire management skills applied to the field of video game programming
- ◆ Master basic programming languages used in video games
- ◆ Apply knowledge of software engineering and specialized programming to video game development
- ◆ Understand the role of programming in video game development

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You will achieve your goals thanks to our tools and you will be accompanied along the way by leading professionals"





Specific Objectives

Module 1. Programming Fundamentals

- ◆ Understand the basic structure of computers, software and general-purpose programming languages
- ◆ Analyze the essential elements of a computer program, such as the different data types, operators, expressions, statements, I/O and control statements
- ◆ Interpret algorithms as the necessary basis to develop computer programs

Module 2. Software Engineering

- ◆ Become familiar with the bases of software engineering, software processes and different development models, including agile technologies
- ◆ Recognize requirements engineering, its development, elaboration, negotiation and validation in order to understand the main standards in terms of software quality and project management

Module 3. Video Game Engines

- ◆ Discover how a video game engine works and its architecture
- ◆ Understand the basic features of existing game engines
- ◆ Correctly and efficiently program applications used in video game engines
- ◆ Choose the most appropriate paradigm and programming languages to program applications used in video game engines

03

Structure and Content

This program has been created by leading experts in video game development, so students can enjoy the best content available in the area. Students are guaranteed to learn knowledge that can be directly applied to their professional careers, enabling them to achieve professional success thanks to the skills acquired on the course. Among other things, they will learn the basics of programming and software engineering, and will expand their knowledge in the use of video game engines.





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Program like the best developers in the world thanks to these excellent contents”

Module 1. Programming Fundamentals

- 1.1. Introduction to Programming
 - 1.1.1. Basic Computer Structure
 - 1.1.2. Software
 - 1.1.3. Programming Languages
 - 1.1.4. Computer Application Life Cycle
- 1.2. Algorithm Design
 - 1.2.1. Problem Solving
 - 1.2.2. Descriptive Techniques
 - 1.2.3. Algorithm Elements and Structure
- 1.3. Program Elements
 - 1.3.1. C++ Origin and Features
 - 1.3.2. Development Environment
 - 1.3.3. The Concept of a Program
 - 1.3.4. Types of Fundamental Data
 - 1.3.5. Operators
 - 1.3.6. Expressions
 - 1.3.7. Statements
 - 1.3.8. Data Input and Output
- 1.4. Control Statements
 - 1.4.1. Statements
 - 1.4.2. Branches
 - 1.4.3. Loops
- 1.5. Abstraction and Modularity: Functions
 - 1.5.1. Modular Design
 - 1.5.2. Concept of Function and Utility
 - 1.5.3. Definition of Function
 - 1.5.4. Execution Flow when Function Is Called
 - 1.5.5. Function Prototypes
 - 1.5.6. Results Return
 - 1.5.7. Calling Functions: Parameters
 - 1.5.8. Parameter Passing According to Reference and Value
 - 1.5.9. Scope Identifier
- 1.6. Statistical Data Structures
 - 1.6.1. Arrays
 - 1.6.2. Matrices Polyhedra
 - 1.6.3. Searching and Sorting
 - 1.6.4. Chaining: I/O Functions for Chains
 - 1.6.5. Structures: Unions
 - 1.6.6. New Types of Data
- 1.7. Dynamic Data Structures: Pointers
 - 1.7.1. Concept: Definition of Pointer
 - 1.7.2. Pointer Operators and Operations
 - 1.7.3. Pointer Arrays
 - 1.7.4. Pointers and Arrays
 - 1.7.5. Chain Pointers
 - 1.7.6. Structure Pointers
 - 1.7.7. Multiple Indirection
 - 1.7.8. Function Pointers
 - 1.7.9. Function, Structure and Array as Function Parameters
- 1.8. Files
 - 1.8.1. Basic Concepts
 - 1.8.2. File Operations
 - 1.8.3. Types of Files
 - 1.8.4. File Organization
 - 1.8.5. Introduction to C++ Files
 - 1.8.6. Managing Files
- 1.9. Recursion
 - 1.9.1. Definition of Recursion
 - 1.9.2. Types of Recursion
 - 1.9.3. Advantages and Disadvantages
 - 1.9.4. Considerations
 - 1.9.5. Recursive-Iterative Conversion
 - 1.9.6. Recursion Stack

- 1.10. Testing and Documentation
 - 1.10.1. Program Testing
 - 1.10.2. White Box Testing
 - 1.10.3. Black Box Testing
 - 1.10.4. Testing Tools
 - 1.10.5. Program Documentation

Module 2. Software Engineering

- 2.1. Introduction to Software Engineering and Modeling
 - 2.1.1. The Nature of Software
 - 2.1.2. The Unique Nature of Webapps
 - 2.1.3. Software Engineering
 - 2.1.4. The Software Process
 - 2.1.5. Software Engineering Practice
 - 2.1.6. Software Myths
 - 2.1.7. How Does It All Begin?
 - 2.1.8. Object-Oriented Concepts
 - 2.1.9. Introduction to UML
- 2.2. The Software Process
 - 2.2.1. A General Process Model
 - 2.2.2. Prescriptive Process Models
 - 2.2.3. Specialized Process Models
 - 2.2.4. The Unified Process
 - 2.2.5. Personal and Team Process Models
 - 2.2.6. What Is Agility?
 - 2.2.7. What Is an Agile Process?
 - 2.2.8. Scrum
 - 2.2.9. Agile Process Toolkit
- 2.3. Principles Guiding Software Engineering Practice
 - 2.3.1. Principles Guiding the Process
 - 2.3.2. Principles Guiding the Practice
 - 2.3.3. Principles of Communication
 - 2.3.4. Planning Principles
 - 2.3.5. Modeling Principles
 - 2.3.6. Construction Principles
 - 2.3.7. Deployment Principles
- 2.4. Understanding the Requirements
 - 2.4.1. Requirements Engineering
 - 2.4.2. Establish the Basis
 - 2.4.3. Inquiry of Requirements
 - 2.4.4. Development of Cases Studies
 - 2.4.5. Elaboration of the Requirements Model
 - 2.4.6. Negotiation of Requirements
 - 2.4.7. Validation of Requirements
- 2.5. Requirements Modeling: Scenarios, Information and Analysis Classes
 - 2.5.1. Analysis of Requirements
 - 2.5.2. Scenario-Based Modeling
 - 2.5.3. UML Models that provide the Case Study
 - 2.5.4. Data Modeling Concepts
 - 2.5.5. Class-Based Modeling
 - 2.5.6. Class Diagrams
- 2.6. Requirements Modeling: Flow, Behavior and Patterns
 - 2.6.1. Requirements that Shape Strategies
 - 2.6.2. Flow-Oriented Modeling
 - 2.6.3. Status Diagrams
 - 2.6.4. Creation of a Behavioral Model
 - 2.6.5. Sequence Diagrams
 - 2.6.6. Communication Diagrams
 - 2.6.7. Patterns for Requirements Modeling
- 2.7. Design Concepts
 - 2.7.1. Design in the Software Engineering Context
 - 2.7.2. The Design Process
 - 2.7.3. Design Concepts
 - 2.7.4. Object-Oriented Design Concepts
 - 2.7.5. Model of the Design

- 2.8. Designing the Architecture
 - 2.8.1. Software Architecture
 - 2.8.2. Architectural Genres
 - 2.8.3. Architectural Styles
 - 2.8.4. Architectural Design
 - 2.8.5. Evolution of Alternative Designs for Architecture
 - 2.8.6. Mapping the Architecture Using the Data Flow
- 2.9. Component-Level and Pattern-Based Design
 - 2.9.1. What Is a Component?
 - 2.9.2. Class-Based Component Design
 - 2.9.3. Realization of the Design at the Component Level
 - 2.9.4. Design of Traditional Components
 - 2.9.5. Component-Based Development
 - 2.9.6. Design Patterns
 - 2.9.7. Pattern-Based Software Design
 - 2.9.8. Architectural Patterns
 - 2.9.9. Design Patterns at the Component Level
 - 2.9.10. User Interface Design Patterns
- 2.10. Software Quality and Project Management
 - 2.10.1. Quality
 - 2.10.2. Software Quality
 - 2.10.3. The Software Quality Dilemma
 - 2.10.4. Achieving Software Quality
 - 2.10.5. Software Quality Assurance
 - 2.10.6. The Administrative Spectrum
 - 2.10.7. The Staff
 - 2.10.8. The product
 - 2.10.9. The Process
 - 2.10.10. The Project
 - 2.10.11. Principles and Practices

Module 3. Video Game Engines

- 3.1. Video Games and Information Communication Technologies (ICTs)
 - 3.1.1. Introduction
 - 3.1.2. Opportunities
 - 3.1.3. Challenges
 - 3.1.4. Conclusions
- 3.2. The History of Video Game Engines
 - 3.2.1. Introduction
 - 3.2.2. Atari
 - 3.2.3. The 80s
 - 3.2.4. First Engines: The 90s
 - 3.2.5. Current Engines
- 3.3. Video Game Engines
 - 3.3.1. Types of Engines
 - 3.3.2. Video Game Engine Parts
 - 3.3.3. Current Engines
 - 3.3.4. Selecting an Engine
- 3.4. Motor Game Maker
 - 3.4.1. Introduction
 - 3.4.2. Scenario Design
 - 3.4.3. Sprites and Animations
 - 3.4.4. Collisions
 - 3.4.5. Scripting in Game Maker Languages (GML)
- 3.5. Unreal Engine 4: Introduction
 - 3.5.1. What Is Unreal Engine 4? What Is its Philosophy?
 - 3.5.2. Materials
 - 3.5.3. UI
 - 3.5.4. Animations
 - 3.5.5. Particle Systems
 - 3.5.6. Artificial Intelligence
 - 3.5.7. Frames Per Second (FPS)
- 3.6. Unreal Engine 4: Visual Scripting
 - 3.6.1. Blueprints and Visual Scripting Philosophy
 - 3.6.2. Debugging
 - 3.6.3. Types of Variables
 - 3.6.4. Basic Flow Control



- 3.7. Unity 5 Engine
 - 3.7.1. C# y Visual Studio Programming
 - 3.7.2. Creating Prefabs
 - 3.7.3. Using Gizmos to Control Video Games
 - 3.7.4. Adaptive Engine: 2D and 3D
- 3.8. Godot Engine
 - 3.8.1. Godot Design Philosophy
 - 3.8.2. Object-Oriented Design and Composition
 - 3.8.3. All in One Package
 - 3.8.4. Open and Community-Driven Software
- 3.9. RPG Maker Engine
 - 3.9.1. RPG Maker Philosophy
 - 3.9.2. Taking as a Reference
 - 3.9.3. Creating a Game with Personality
 - 3.9.4. Commercially Successful Games
- 3.10. Source 2 Engine
 - 3.10.1. Source 2 Philosophy
 - 3.10.2. Source and Source 2: Evolution
 - 3.10.3. Community Use: Audiovisual Content and Video Games
 - 3.10.4. Future of Source 2 Engine
 - 3.10.5. Successful Mods and Games



You will develop the best video games in the world thanks to your newly acquired knowledge”

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.





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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.

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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.



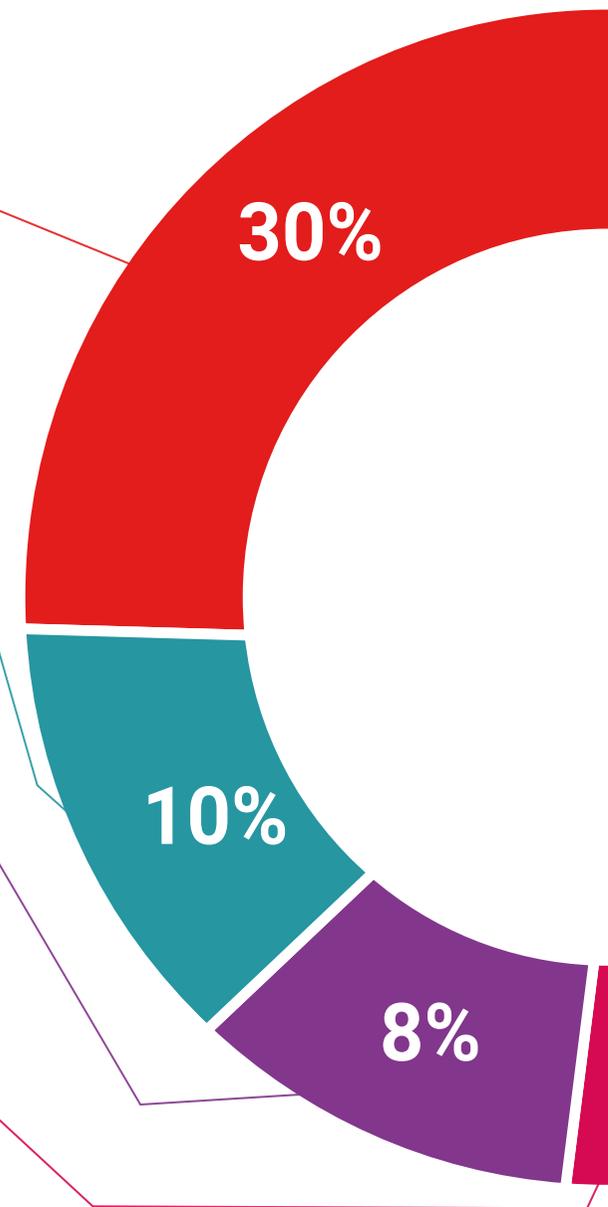
Practising Skills and Abilities

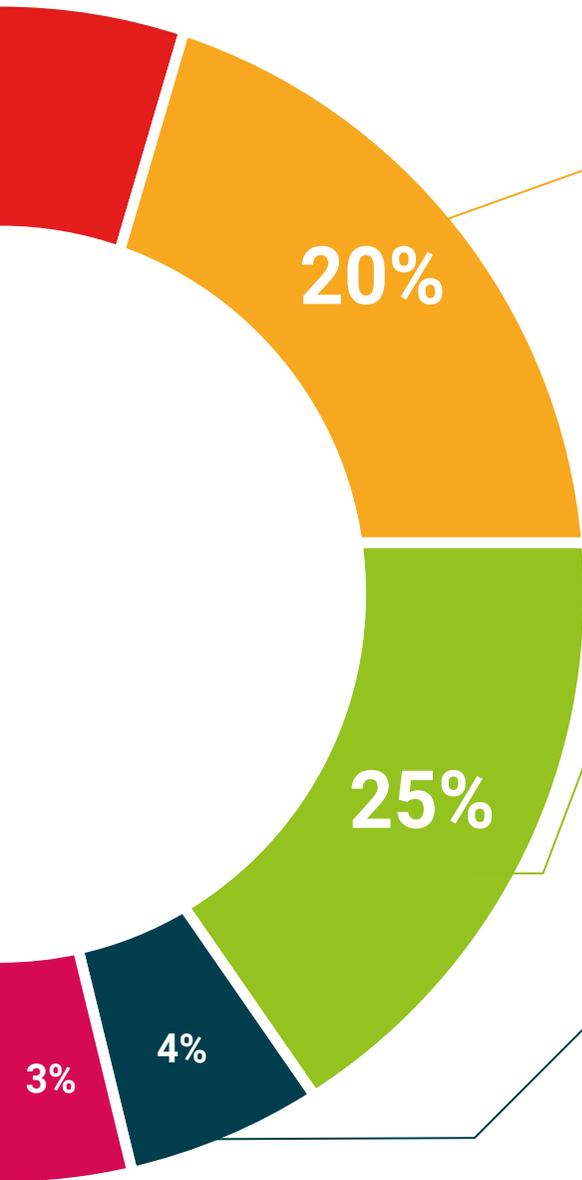
They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization we live in.



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 Diploma in Video Game Programming Management guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Global University.



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

This program will allow you to obtain your **Postgraduate Diploma in Video Game Programming Management** 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 Video Game Programming Management**

Modality: **online**

Duration: **6 months**

Accreditation: **18 ECTS**



future
health confidence people
education information tutors
guarantee accreditation teaching
institutions technology learning
community commitment
personalized service innovation
knowledge present
online tra
velopment langu
classroom



Postgraduate Diploma Video Game Programming Management

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

Postgraduate Diploma Video Game Programming Management