Postgraduate Certificate

Video Game Programming Principles

tech *technological university*

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Postgraduate Certificate

Video Game Programming Principles

- » Modality: **online**
- » Duration: **12 weeks**
- » Certificate: **TECH Technological University**
- » Dedication: **16h/week**
- » Schedule: **at your own pace**
- » Exams: **online**

Website: **www.techtitute.com/pk/information-technology/postgraduate-certificate/video-game-programming-principles**

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01
Introduction

Programming is one of the essential disciplines in Computer Science. It allows for the creation of Software, Operating Systems and any Digital Tool in daily use. Thus, it is a field of great complexity that has numerous applications. In the area of Video Games, Programming is also very important, but specific knowledge is needed to be able to respond to the specific challenges posed by Video Game Development. For this reason, this course offers its students fundamental competencies in Applied Programming for Video Games, so that they can access large companies in the industry thanks to the high level skills they will have acquired.

" *Learn the Principles of Video Game Programming in depth and position yourself for the best career opportunities in this exciting industry"*

The design process of a video game goes through different stages, among which the programming phase stands out. This is a fundamental task, since it will ensure the video game works without errors, processes its graphics smoothly and, ultimately, becomes successful. But for this task to be carried out properly, specific knowledge of video game development is of the utmost importance.

Programming is the basis for all types of software and digital devices, but video games require greater specialization to develop quality products. That is why this Postgraduate Certificate in Video Game Programming Principles can be a breakthrough for all professionals and students who wish to join a large company in the industry, since it provides them with all the knowledge and skills necessary to become true experts in the field.

Furthermore, this course is imparted through a 100% online innovative teaching methodology, making it perfect for those who need to balance their studies with their professional career and personal life, without sacrificing quality training.

This **Postgraduate Certificate in Video Game Programming Principles** contains the most complete and up to date academic program on the market. Its most notable features are:

- Practical cases presented by experts in video game programming and development
- The graphic, schematic, and eminently practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- Practical exercises where self assessment can be used to improve learning
- Its special emphasis on innovative methodologies
- Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- Content that is accessible from any fixed or portable device with an Internet connection

Learn all about the Principles of Video Game Programming with this course"

"The programming applied to video games has a series of particularities that should be known. Specialize now and go far in this exciting industry"

Large companies in the sector will want to hire you. Enroll now and find out for yourself.

This Postgraduate Certificate is what you need to turn your professional career around.

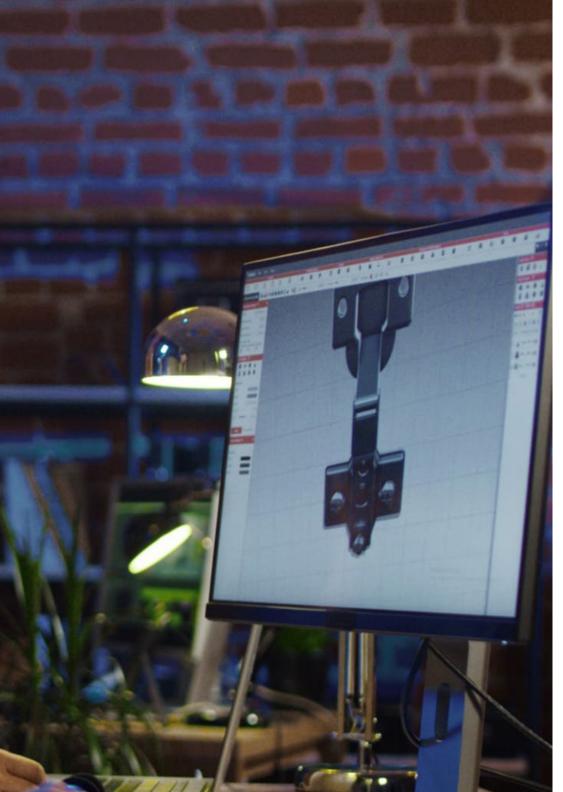The program's teaching staff includes professionals from the sector who contribute their work experience to this training program, as well as renowned specialists from leading societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive training programmed to train in real situations.

This program is designed around Problem Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the academic year. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

02
Objectives

The main objective of this Postgraduate Certificate in Video Game Programming Principles is to offer students the possibility of becoming highly sought after professionals by the best companies in the industry. To do so, it provides them with a series of competencies, skills and knowledge that will turn them into true specialists in Video Game Programming. Thus, this course is what professionals and students need to be able to access this exciting field.

Achieve all your professional goals with this Postgraduate Certificate"

General Objectives

- Become familiar the different Programming Languages and Methods applied to Video Games
- Delve deeper into the Video Game Production Process and Integrate Programming throughout each stage
- Master the Basic Programming Languages used in Video Games
- Understand the role of Programming in Video Game Development

Master programming principles and develop the next blockbuster video games around the world"

Specific Objectives

Module 1. Programming Fundamentals

- Understand the Basic Structure of Computers, Software and the 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. 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

03
Structure and Content

This Postgraduate Certificate in Video Game Programming Principles is structured in two specialized modules through which students can learn everything about Algorithms, Software Components, Data Structures or Video Game Engines. Students will have a lot of specialized knowledge to succeed in large companies in the sector, which are constantly looking for new talented developers to program their next successful video games.

Program high quality Video Games with what you will learn in this course"

Module 1. Programming Fundamentals

1.1. Introduction to Programming
    1.1.1. Basic Computer Structure
    1.1.2. Software
    1.1.3. Video Game
    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. Concept of 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: Function
    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. Statistical 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 Passing 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
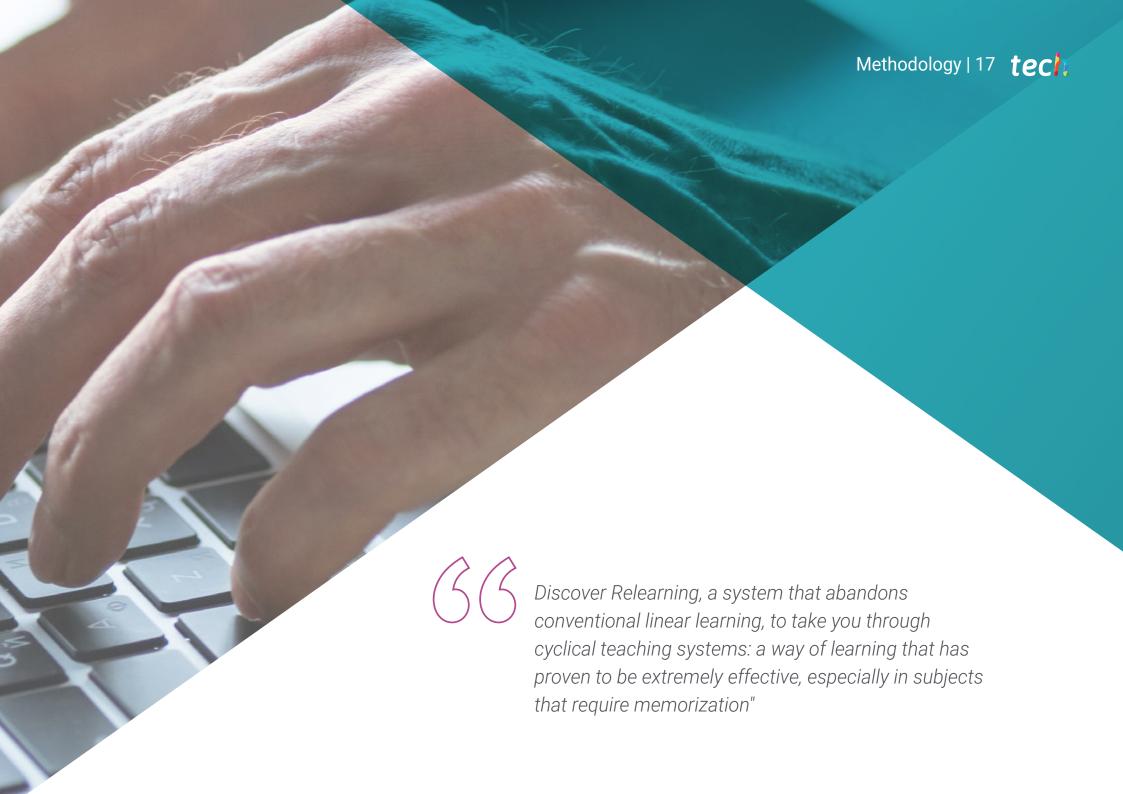
Module 2. Video Game Engines

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 Information Technology schools for as long as they have existed. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question that you are presented with in the case method, an action-oriented learning method. Throughout the course, students will be presented with multiple real cases. They will have to combine all their knowledge and research, and argue and defend their ideas and decisions.

Relearning Methodology

TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 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 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.

05

Certificate

The Postgraduate Certificate in Video Game Programming Principles guarantees, in addition to the most rigorous and up to date training, access to a qualification issued by TECH Technological University.

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

This **Postgraduate Certificate in Video Game Programming Principles** 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 Certificate** issued by **TECH Technological University** via tracked delivery*.

The certificate 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 Certificate in Video Game Programming Principles**
Official Nº of hours: **300 h.**

tech technological university

Awards the following
CERTIFICATE
to
Mr./Ms. _____, with identification number _____.
For having passed and accredited the following program

POSTGRADUATE CERTIFICATE
in

Video Game Programming Principles

This is a qualification awarded by this University, equivalent to 300 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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