

# Postgraduate Certificate Object Oriented Programming





## Postgraduate Certificate Object Oriented Programming

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

Website: [www.techtitute.com/us/information-technology/postgraduate-certificate/object-oriented-programming](http://www.techtitute.com/us/information-technology/postgraduate-certificate/object-oriented-programming)

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# 01

# Introduction

Object Oriented Programming is one of the most used basic forms of programming when developing video games. This type of languages has the necessary characteristics to be very useful in video game development, so mastering them is essential for all those who wish to specialize in this field. This degree offers students all the specific knowledge to master these languages, especially C++, one of the most important languages nowadays, not only in the field of video games, but also in software development in general.







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*Master object-oriented programming and become an expert game developer”*

Since the first programming languages were created decades ago, there have been many that have adapted to each technological and theoretical advance in code development and that have adjusted to each circumstance that arose as computing progressed until becoming a fundamental element in contemporary societies.

Thus, the field of object-oriented programming has grown over the last 30 years to become one of the essential components of a large number of software development areas. One of these areas is that of video games, which uses this type of programming to create code.

Within this complex field, one of the most prominent languages is C++. This language will be analyzed and studied in depth in this Postgraduate Certificate in Object Oriented Programming, whose main objective is to provide students with all the necessary knowledge to succeed in this industry as expert video game developers.

This **Postgraduate Certificate in Object Oriented Programming** contains the most complete and up-to-date scientific program on the market. Its most notable features are:

- ◆ Practical cases presented by experts in object-oriented programming
- ◆ 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 C++ and develop the best video games in the world thanks to this Postgraduate Certificate”*

“ *Object-oriented programming is basic for video game development. Specialize and become a highly sought-after professional in the industry”*

*Program like the best experts in the world thanks to this Postgraduate Certificate.*

*With this course, you will be able to aspire to work in the best companies in the industry.*

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.



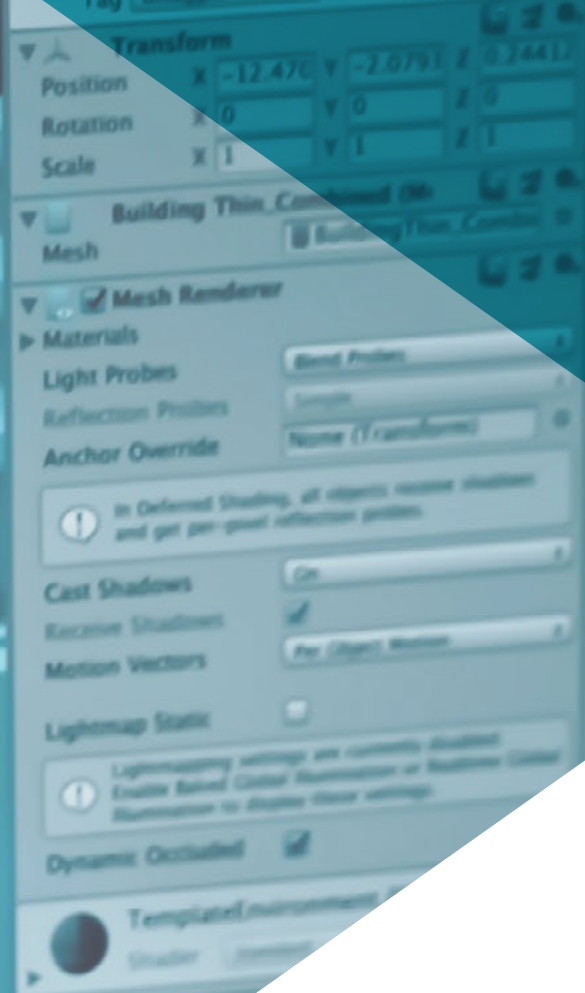
# 02 Objectives

The main objective of this Postgraduate Certificate in Object Oriented Programming is to offer students the best training and skills to be able to develop prestigious Video Games with all the guarantees. Throughout the course, students will learn everything about this type of programming and the most used languages, such as C++, so they can advance professionally thanks to the new knowledge acquired here at TECH.





Current: 10.9  
Lap 1: 15.09  
Session Best Lap:  
15.09



Karting  
INTERACTIVE TUTORIALS

“

*With this Postgraduate Certificate in Object Oriented Programming, you will achieve everything you've set yourself out to do”*



## General Objectives

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- ◆ Become familiar the different Programming Languages and Methods applied to Video Games
- ◆ Master the Basic Programming Languages used in Video Games
- ◆ Apply knowledge of Software Engineering and Specialized Programming to Video Games
- ◆ Understand the role of Programming in Video Game Development





## Specific Objectives

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- ◆ Know the different Design Patterns for Object Oriented problems
- ◆ Understand the importance of Documentation and Testing in Software Development
- ◆ Manage the use of Threading and Synchronization, and solve common problems in Concurrent Programming

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*Master languages like C++ and angle to work for the best Video Game Companies in the world”*

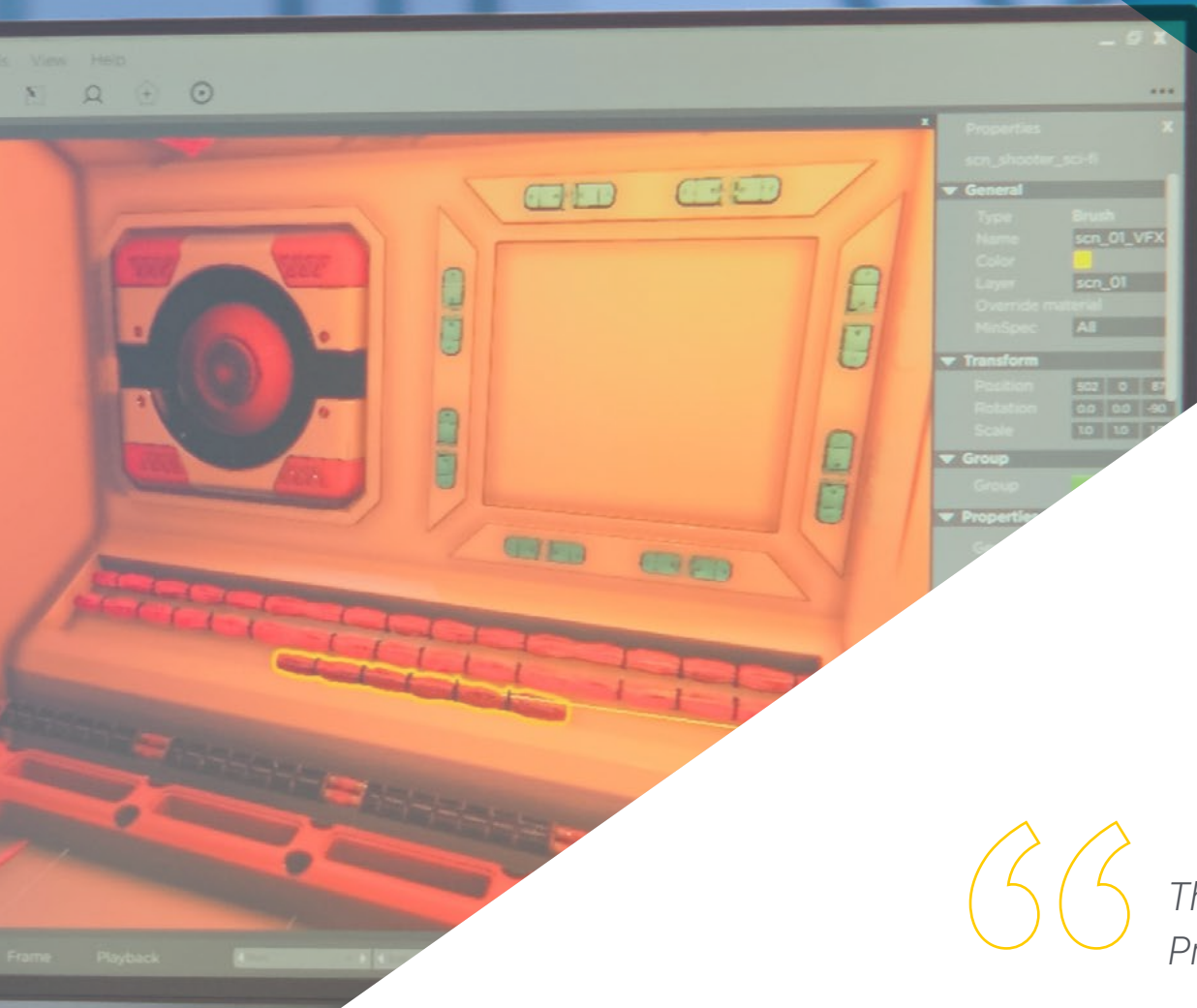


# 03

## Structure and Content

The contents of this Postgraduate Certificate in Object Oriented Programming have been designed so students master all the necessary tools to develop video games at the highest level. Throughout this course, they will learn such things as the Concept of Classes, Design Patterns, Exceptions or the Creation of User Interfaces. In this way, students will obtain a complete and deep training that will immediately lead them to success.





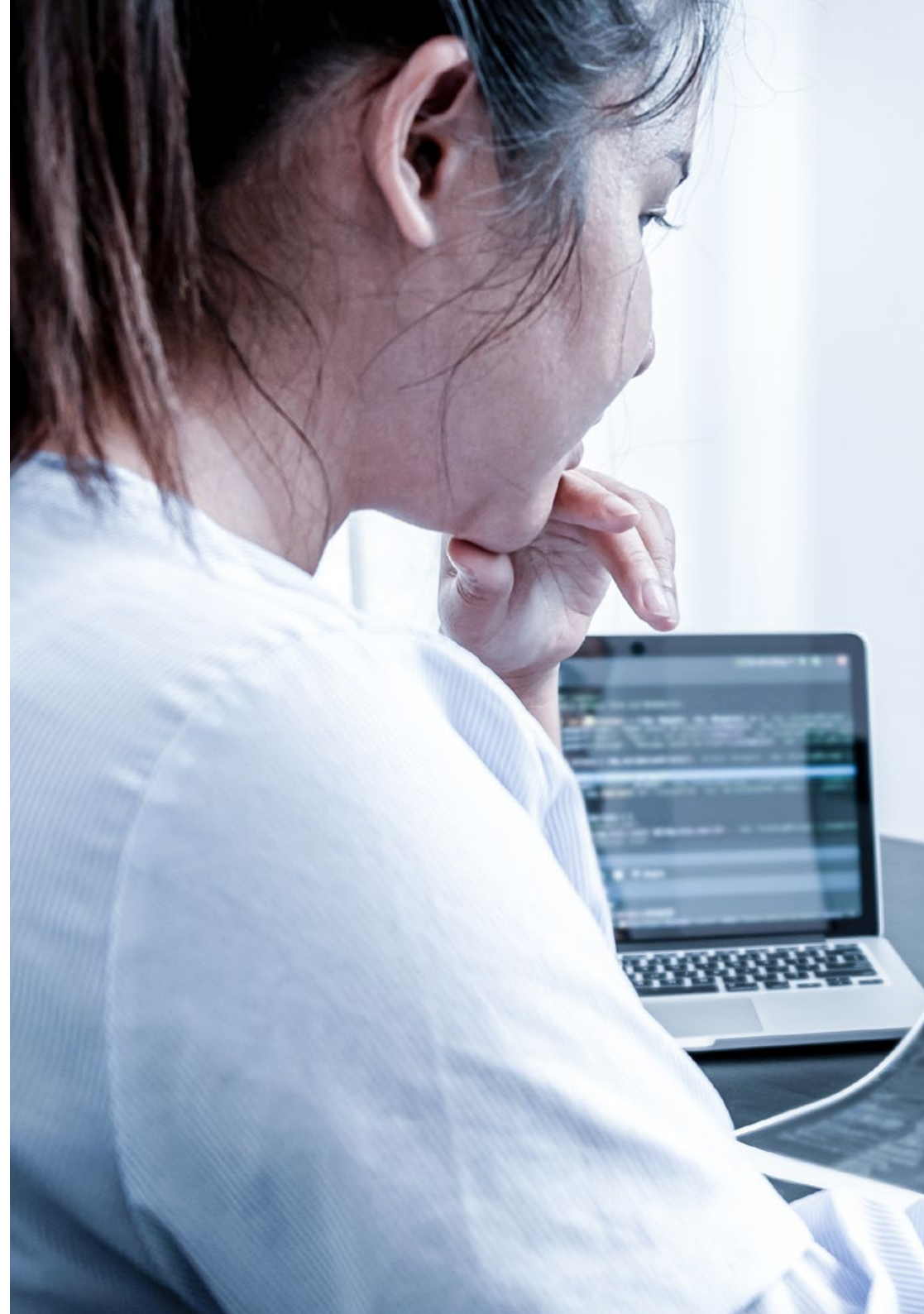
“

*The best contents to master Object Oriented Programming are here at TECH”*



## Module 1. Object Oriented Programming

- 1.1. Introduction to Object Oriented Programming
  - 1.1.1. Introduction to Object Oriented Programming
  - 1.1.2. Class Design
  - 1.1.3. Introduction to Unified Modeling Language (UML) for Problem Modeling
- 1.2. Class Relations
  - 1.2.1. Abstractions and Heritage
  - 1.2.2. Advanced Concepts of Heritage
  - 1.2.3. Polymorphism
  - 1.2.4. Composition and Aggregation
- 1.3. Introduction to Design Patterns for Object Oriented problems
  - 1.3.1. What Are Design Patterns?
  - 1.3.2. Factory Pattern
  - 1.3.4. Singleton Pattern
  - 1.3.5. Observer Pattern
  - 1.3.6. Composite Pattern
- 1.4. Exceptions
  - 1.4.1. What Are Exceptions?
  - 1.4.2. Catching and Handling Exceptions
  - 1.4.3. Launching Exceptions
  - 1.4.4. Creating Exceptions
- 1.5. User Interface
  - 1.5.1. Introduction to Qt
  - 1.5.2. Positioning
  - 1.5.3. What Are Events?
  - 1.5.4. Events: Definition and Catching
  - 1.5.5. User Interface Development
- 1.6. Introduction to Concurrent Programming
  - 1.6.1. Introduction to Concurrent Programming
  - 1.6.2. Concept of Process and Thread
  - 1.6.3. Process and Thread Interaction
  - 1.6.4. C++ Threads
  - 1.6.5. Advantages and Disadvantages of Concurrent Programming





- 1.7. Thread Management and Synchronization
  - 1.7.1. Thread Life Cycle
  - 1.7.2. Thread Class
  - 1.7.3. Thread Planning
  - 1.7.4. Thread Groups
  - 1.7.5. Daemon Threads
  - 1.7.6. Synchronization
  - 1.7.7. Locking Mechanisms
  - 1.7.8. Communication Mechanisms
  - 1.7.9. Monitors
- 1.8. Common Problems in Concurrent Programming
  - 1.8.1. Producer-Consumer Problem
  - 1.8.2. Readers-Writers Problem
  - 1.8.3. Dining Philosophers Problem
- 1.9. Software Testing and Documentation
  - 1.9.1. Why Is It Important to Document Software?
  - 1.9.2. Design Documentation
  - 1.9.3. Documentation Tool Use
- 1.10. Software Tests
  - 1.10.1. Introduction to Software Tests
  - 1.10.2. Types of Tests
  - 1.10.3. Unit Test
  - 1.10.4. Integration Test
  - 1.10.5. Validation Test
  - 1.10.6. System Test

“*The best companies in the industry are waiting for you. Enroll now*”

# 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.





A close-up photograph of a person's hands typing on a laptop keyboard. The image is partially obscured by a teal diagonal graphic element that runs from the top right towards the bottom left. The background is a solid teal color.

“

*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"*

### At TECH we use the Case Method

Our program offers a revolutionary method of skills and knowledge development. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

“

*At TECH, you will experience a way of learning that is shaking the foundations of traditional universities around the world."*



*We are the first online university to combine Harvard Business School case studies with a 100% online learning system based on repetition.*





### A learning method that is different and innovative.

This intensive Information Technology program at TECH Technological University prepares you to face all the challenges in this field, both nationally and internationally. We are committed to promoting your personal and professional growth, the best way to strive for success, that is why at TECH Technological University you will use Harvard *case studies*, with which we have a strategic agreement that allows us, to offer you material from the best university in the world.

“

*Our program prepares you to face new challenges in uncertain environments and achieve success in your career”*

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

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

Our university is the first in the world to combine Harvard University case studies with a 100%-online learning system based on repetition, which combines different teaching elements in each lesson.

We enhance Harvard case studies 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 university 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.



### Practicing 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 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

They will complete a selection of the best case studies in the field used at Harvard. Cases that are presented, analyzed, and supervised by the best senior management 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 multimedia content presentation training Exclusive system 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 your goals.





# 05 Certificate

The Postgraduate Certificate in Object Oriented Programming 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 diploma without travel or  
laborious paperwork"*

This **Postgraduate Certificate in Object Oriented Programming** 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 Certificate** 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 Certificate in Object Oriented Programming**

Official Number of Hours: **150 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.

health

future

confidence people

education information tutors

guarantee accreditation teaching

institutions technology learning

community commitment

personalized service innovation

knowledge present quality

online training

development languages

classroom

**tech** technological  
university

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