

# Postgraduate Certificate Principles of Neurosciences

Endorsed by the NBA





## Postgraduate Certificate

### Principles of Neurosciences

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

Website: [www.techtute.com/us/physiotherapy/postgraduate-certificate/principles-neurosciences](http://www.techtute.com/us/physiotherapy/postgraduate-certificate/principles-neurosciences)

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# 01

# Introduction

The brain is an incredible organ that processes information from the environment and transforms it into electrical current and then interprets it. In physiotherapy there are very powerful tools that are based on the knowledge of Neuroscience to generate a positive change in the patient's life. Because of this, it is essential to have professionals who perfectly understand the neurological and functional basis of the brain, i.e., how it processes information and the structures involved.





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*This new program will help you better understand the different neural levels to improve your physical therapy techniques”*

Neuroscience has become a fundamental pillar for many disciplines in recent years. With a very simple premise, it is the science that is interested in understanding the brain as a modeling organ, organizer and creator of every aspect of human life, including pleasant and unpleasant constructs, such as pain. Therefore, the new scientific procedures of exploration in this field have opened a new panorama toward a deeper understanding of cognitive processes.

Based on the above, we have created a program focused on learning the bases and main elements of neuroeducation and the fundamentals of the nervous system and neuronal connections. This will allow students to identify the brain mechanisms underlying learning, memory, language, sensory and motor systems, attention, emotions and the influence of the environment on all of these.

All the content is available in a 100% online Postgraduate Certificate that gives students the ease of being able to study it comfortably, wherever and whenever they want. Students will only need a device with internet access to take their career one step further. A modality according to the current times with all the guarantees to position professionals in a highly demanded sector.

This **Postgraduate Certificate in Principles of Neurosciences** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ◆ Practical cases presented by experts in Neuroeducation
- ◆ 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



*The brain is a complex and complete organ: understand how it works at a global level to take your career to the next level"*

“

*Through case studies you will be able to identify real situations in a work environment and create a strategy that will help you in different scenarios”*

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

Its multimedia content, developed with the latest educational technology, will allow professionals to learn in a contextual and situated learning environment, i.e., a simulated environment that will provide immersive education programmed to prepare in real situations.

The design of this program focuses on Problem-Based Learning, by means of which professionals 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.

*It has an excellent faculty and a program that is at the forefront in the field of Neuroscience.*

*It knows the brain mechanisms underlying learning, memory, language, sensory and motor systems.*



# 02

## Objectives

TECH accompanies its students on the path to excellence, and has developed a program that allows them to complete their academic and work profile in a satisfactory manner. With this in mind, the syllabus focused on the Principles of Neuroscience, aims to broaden the knowledge about the functioning of the nervous system and neuronal connections, and to understand the effects of the environment on the brain. After completing the Postgraduate Certificate, professionals will be able to understand how learning processes emerge and develop in their students.



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*Achieve your professional goals  
by completing a program focused  
on the advances that have been  
developed in Neurosciences”*



## General Objectives

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- ◆ Know the basis and main elements in Neuroeducation
- ◆ Integrate the new contributions of brain science in the teaching-learning processes

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*With a 100% online program, you will have the tools you need to complete this Postgraduate Certificate”*





## Specific Objectives

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- ◆ Describe the functioning of the nervous system
- ◆ Explain the basic anatomy of learning-related structures
- ◆ Define the basic physiology of learning-related structures
- ◆ Identify the main brain structures related to motor skills
- ◆ Define the plastic brain and neuroplasticity
- ◆ Explain the effects of environment on brain development
- ◆ Describe the changes in the infant's brain
- ◆ Explain the evolution of the adolescent brain
- ◆ Define the characteristics of the adult brain

03

# Course Management

The syllabus has the direction of an excellent group of professionals with extensive experience in the sector, joining together to create an academic program that includes everything students need to specialize in Neurosciences, perfectly meeting the demands of today's labor market. This is what will ensure students the certainty of receiving the most updated and complete information, being able to put into practice almost instantaneously everything they learn in each class.





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*The program puts theory into practice by following the examples of real cases dictated by professionals in the field of neuroscience”*

## Management



### Ms. Pellicer Royo, Irene

- ◆ Master's Degree in Emotional Education and Well-being
- ◆ Postgraduate in Neuroeducation
- ◆ Certificate in Management and Administration of Sports Entities
- ◆ Degree in Physical Activity and Sports Science Master's Degree in Medical Sciences applied to Physical Activity and Sport

## Professors

### Dr. De la Serna, Juan Moisés

- ◆ Doctor in Psychology Master's Degree in Neurosciences and Behavioral Biology
- ◆ University Specialist in Clinical Hypnosis
- ◆ Director of the Open Chair in Psychology and Neurosciences
- ◆ Diploma in Didactic Methodology Expert in Project Management Occupational Trainer

### Dr. Navarro Ardoy, Daniel

- ◆ PhD. Exercise Physiology Applied to Health Physical activity and health program Faculty of Medicine
- ◆ Degree in Physical Activity and Sports Science

### Ms. Rodríguez Ruiz, Celia

- ◆ Specialization in clinical psychology and child psychotherapy
- ◆ Specialization in Cognitive Behavioral Therapy in Childhood and Adolescence
- ◆ Degree in Pedagogy
- ◆ Degree in Psychology



# 04

## Structure and Content

For this Postgraduate Certificate, a program has been devised that meets all the requirements to guarantee the excellence of its students. Throughout each class, you will have the opportunity to acquire specific knowledge to understand the effects of the environment on brain development. All this, from a global point of view for the sake of its application at an international level, incorporating all the fields of work involved in the development of professionals in this type of work environment.





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*It is a program designed by  
the best experts in the field  
who provide quality content"*

## Module 1. Basis of Neurosciences

- 1.1. The Nervous System
  - 1.1.1. Definition of the Nervous System
  - 1.1.2. Components of the Nervous System
  - 1.1.3. Classification of the Nervous Tissue
  - 1.1.4. Electrical Communication of the Neuron
  - 1.1.5. Chemical Communication of the Neuron
- 1.2. Basic Anatomy of Learning-Related Structures
  - 1.2.1. Defining Learning
  - 1.2.2. Classification of the Brain
  - 1.2.3. Formation of the Brain
  - 1.2.4. The Role of the Brain in Learning
- 1.3. Psychological Processes Related to Learning
  - 1.3.1. Defining Cognitive Processes
  - 1.3.2. The Cognitive Process of Sensation
  - 1.3.3. The Cognitive Process of Perception
  - 1.3.4. The Cognitive Process of Attention
  - 1.3.5. The Cognitive Process of Memory
  - 1.3.6. The Cognitive Process of Language
  - 1.3.7. The Cognitive Process of Emotion
  - 1.3.8. The Cognitive Process of Motivation
- 1.4. The Main Brain Structures Related to Motor Skills
  - 1.4.1. Psychomotor Skills
  - 1.4.2. Neural Bases of Motor Skills
  - 1.4.3. Motor Problems in Development
  - 1.4.4. Acquired Motor Problems
- 1.5. The Plastic Brain and Neuroplasticity
  - 1.5.1. Neuronal Plasticity
  - 1.5.2. The Plastic Brain
  - 1.5.3. Neurogenesis
  - 1.5.4. The Plastic Brain and Learning





- 1.6. Epigenetics.
  - 1.6.1. The Role of Genetics in the Brain
  - 1.6.2. The Process of Gestation and the Brain
  - 1.6.3. Definition of Undifferentiated Neurons
  - 1.6.4. The Process of Programmed Neuronal Death
- 1.7. Effects of the Environment on Brain Development
  - 1.7.1. Brain and Environment
  - 1.7.2. Interneuronal Connectivity
  - 1.7.3. Inhibition of Connectivity
- 1.8. Changes in the Infant's Brain.
  - 1.8.1. The Formation of the Infant's Brain
  - 1.8.2. The Process of Myelogenesis
  - 1.8.3. Brain Development
  - 1.8.4. Development of Localization
  - 1.8.5. Development of Lateralization
- 1.9. Evolution of the Adolescent Brain
  - 1.9.1. Defining Adolescence
  - 1.9.2. The Adolescent Brain
  - 1.9.3. The Role of Hormones
  - 1.9.4. Functions of Neurohormones
- 1.10. The Adult Brain
  - 1.10.1. The Adult Brain
  - 1.10.2. Connections Between the Cerebral Hemispheres
  - 1.10.3. Language Processing and the Cerebral Hemispheres

“*The best way to improve your practice with your patients is to know how their brain works at the synapse level*”

# 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.





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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"*

## At TECH we use the Case Method

What should a professional do in a given situation? Throughout the program, students will face multiple simulated clinical cases, based on real patients, in which they will have to do research, establish hypotheses, and ultimately resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Physiotherapists/kinesiologists learn better, faster, and more sustainably over time.

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



According to Dr. Gérvas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching power or because of its uniqueness or rarity. It is essential that the case is based on current professional life, trying to recreate the real conditions of professional physiotherapy practice.

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*Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method”*

The effectiveness of the method is justified by four fundamental achievements:

1. Physiotherapists/kinesiologists who follow this method not only grasp concepts, but also develop their mental capacity, by evaluating real situations and applying their knowledge.
2. The learning process has a clear focus on practical skills that allow the physiotherapist/kinesiologist to better integrate into the real world.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.



## Relearning Methodology

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

This university is the first in the world to combine the study of clinical cases with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, a real revolution with respect to the mere study and analysis of cases.



*The physiotherapist/kinesiologist will learn through real cases and by solving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.*

At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

With this methodology we trained more than 65,000 physiotherapists/kinesiologists with unprecedented success in all clinical specialties, regardless of the workload. Our pedagogical methodology is developed in a highly competitive environment, with a university student body with a strong socioeconomic profile and an average age of 43.5 years old.

*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.*

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.

The overall score obtained by our learning system is 8.01, according to the highest international standards.



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 really 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.



#### Physiotherapy Techniques and Procedures on Video

TECH brings students closer to the latest techniques, the latest educational advances and to the forefront of current Physiotherapy techniques and procedures. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch them as many times as you want.



#### Interactive Summaries

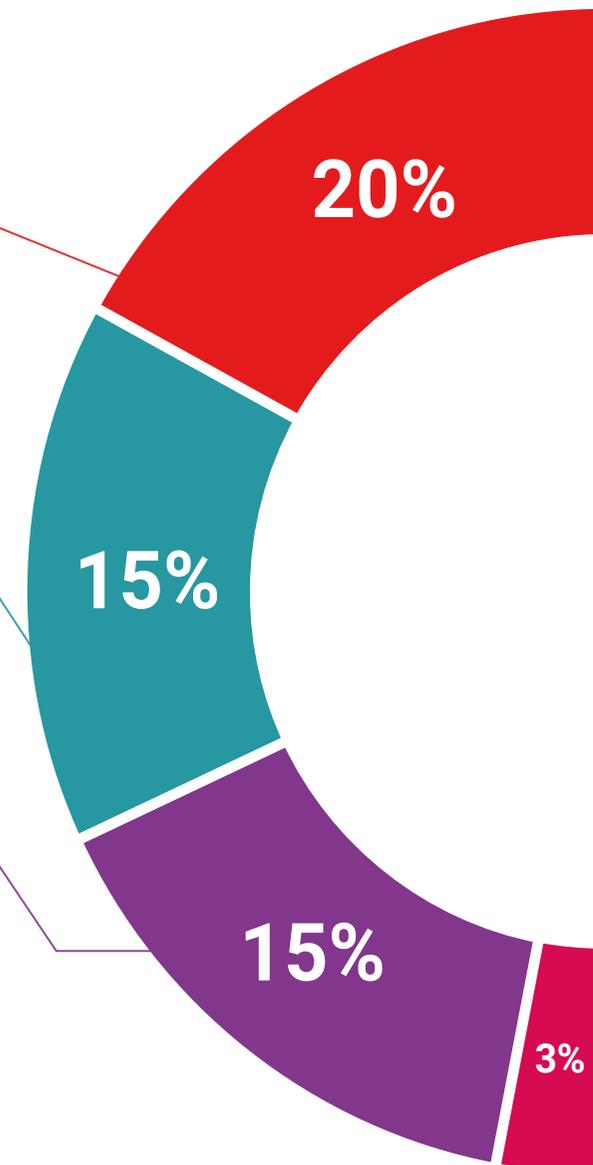
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

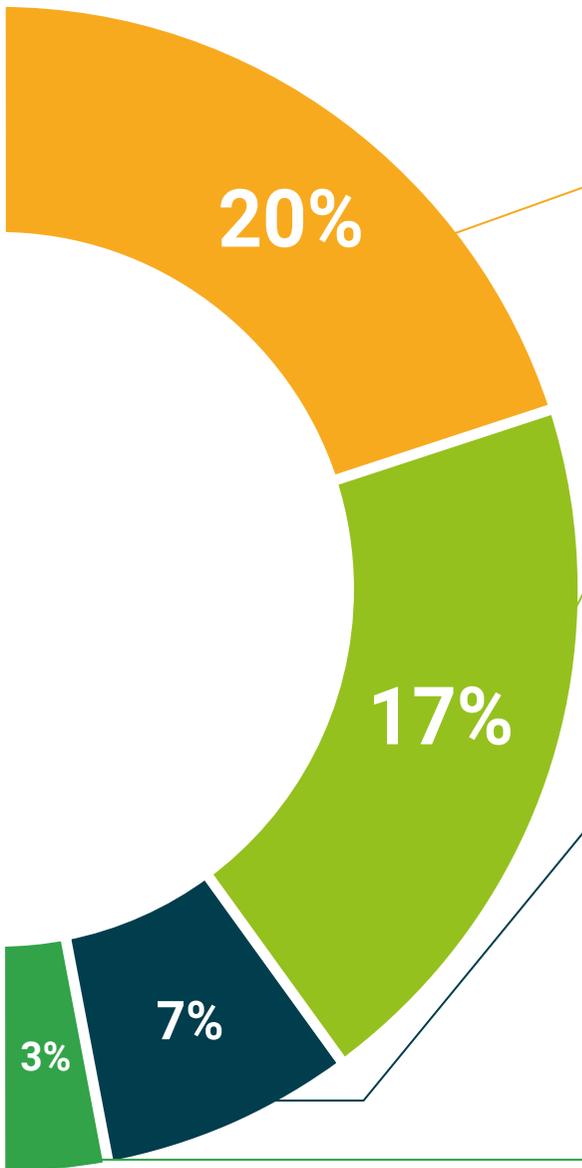
This unique multimedia content presentation training system was awarded by Microsoft as a "European Success Story".



#### 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.





#### Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, TECH presents real cases in which the expert will guide students, focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.



#### 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.



#### Classes

There is scientific evidence on the usefulness of learning by observing experts. The system known as Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



#### Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help students progress in their learning.



06

# Certificate

The Postgraduate Certificate in Principles of Neurosciences guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate 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 Certificate in Principles of Neurosciences** 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 Certificate in Principles of Neurosciences**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**



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



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- » Modality: online
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- » Credits: 6 ECTS
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- » Exams: online

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