

# Professional Master's Degree Neurosurgery





## Professional Master's Degree Neurosurgery

Course Modality: Online

Duration: 12 months

Certificate: TECH Technological University

Official N° of hours: 1,500 h.

Website: [www.techtute.com/pk/medicine/professional-master-degree/master-neurosurgery](http://www.techtute.com/pk/medicine/professional-master-degree/master-neurosurgery)

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# 01

# Introduction

Neurosurgery focuses on the study and treatment of potentially surgical pathology of the central and peripheral nervous system. Its field of action is very broad and is related to multiple medical specialties such as Neurology, Oncology and and Psychiatry; it also shares areas with other surgical specialties such as Orthopedic Surgery, Maxillofacial Surgery, or Otorhinolaryngology. It is, therefore, essential for physicians interested in specializing in a field as fascinating and complex as neurosurgery to be constantly up to date.





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*A comprehensive program that will help you keep up to date with the latest techniques in Neurosurgery”*

In recent years, the interaction of Neurosurgery with new technologies has not only led to a better knowledge of brain pathology, but also to an optimization of the treatments performed with a decrease in morbimortality and an improvement in the results. The expansion of knowledge in neurosciences in the last decades, together with technological innovations that have resulted in important diagnostic and therapeutic advances, have transformed Neurosurgery into a specialty with multiple subspecializations, with the aim of improving the quality of care for neurosurgery patients.

From this perspective, the Professional Master's Degree in Neurosurgery is an up-to-date overview of the pathologies that can be studied and treated by Neurosurgery, as well as the perspective it can offer to other specialties. The application of diagnostic and therapeutic algorithms enhances student learning and synthesizes the flow of information to facilitate its practical application in the student's environment.

On the other hand, the multimedia content developed with the latest interactive educational technology enhances the adoption of problem-solving strategies by students. This way, the student will acquire the necessary skills to approach the diagnosis and treatment of neurosurgical pathologies.

For this reason, this Professional Master's Degree is the most intensive and effective educational program on the market in this field. A high level of training that will allow you to become one of the most up-to-date professionals in the sector, in a field with a high demand for professionals.

This **Professional Master's Degree in Neurosurgery** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ♦ Practical cases presented by experts in neurosurgery
- ♦ 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
- ♦ The latest developments in neurosurgery
- ♦ Practical exercises where the self-assessment process can be carried out to improve learning
- ♦ Special emphasis on innovative methodologies in neurosurgery
- ♦ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection work
- ♦ Content that is accessible from any fixed or portable device with an internet connection



*Expand your knowledge through this Professional Master's Degree in Neurosurgery that will allow you to specialize with a view to achieving excellence in this field"*

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*This Professional Master's Degree may be the best investment you can make when selecting a refresher program, for two reasons: in addition to expanding your knowledge in Neurosurgery, you will obtain a Professional Master's Degree from TECH Technological University"*

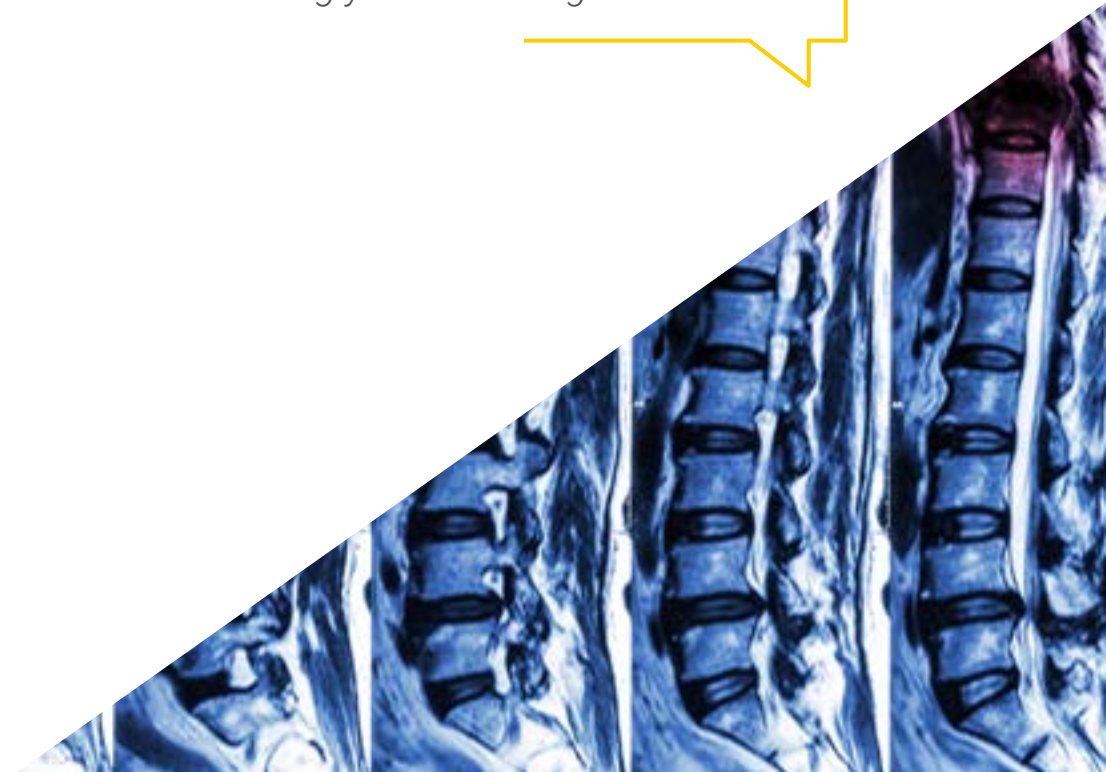
The teaching staff includes medical professionals who bring their experience to this program, as well as renowned specialists from leading societies and prestigious universities.

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 an immersive training experience designed to train for real-life 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 specialist will be assisted by an innovative interactive video system that was created by renowned and experienced experts in neurosurgery with extensive experience.

*Do not hesitate to take this training course with us. You will find the best teaching material with virtual lessons.*

*This 100% online Professional Master's Degree will allow you to combine your studies with your professional work while increasing your knowledge in this field.*



# 02 Objectives

The Professional Master's Degree in Neurosurgery is aimed at aiding the professional's performance with the latest advances and most innovative treatments in the sector.







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*With this Professional Master's Degree, you will be able to specialize in Neurosurgery and learn about the latest advances in the field”*



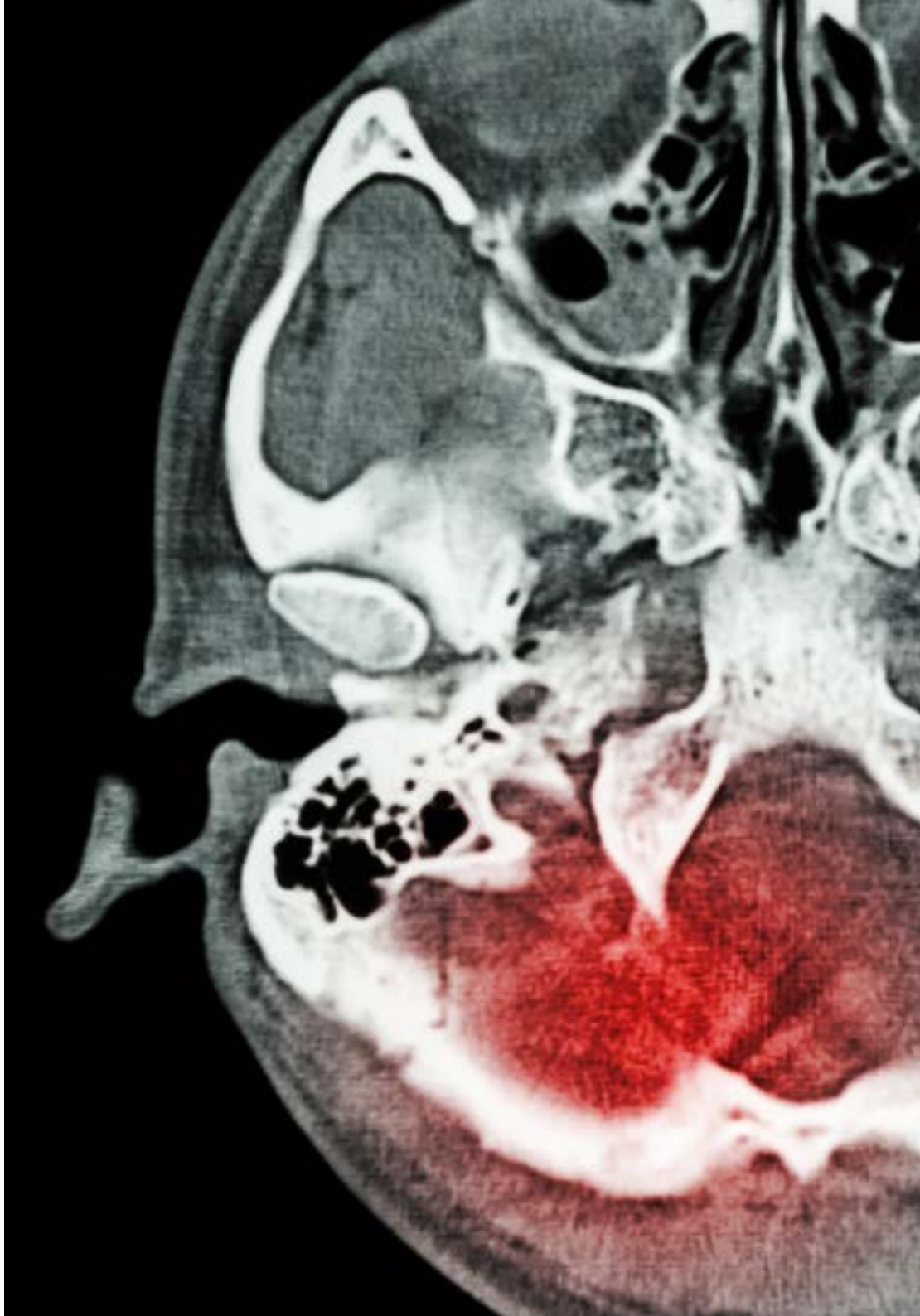
## General Objectives

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- ♦ Acquire more in-depth knowledge of the specialty, with a practical approach to help professionals apply the information learned in their clinical practice, focusing on the latest diagnostic and therapeutic guidelines and the most recent scientific evidence
- ♦ Learn the latest surgical techniques that have been implemented in recent years along with the knowledge of technological development in multiple areas of Neurosurgery



*Don't miss the opportunity and get up to date on the latest advances in Neurosurgery"*





## Specific Objectives

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### Module 1. General Concepts in Neurosurgery. Intracranial Infectious Pathology

- Understand the importance of positioning the neurosurgical patient and how it can influence the surgery, as well as to know the most frequently used positions
- Learn how collaboration with other specialties and the interaction of various factors during surgery (neurophysiological monitoring, anesthesia) and in the immediate postoperative period (critical care) can determine the success of the surgery and neurosurgical patient prognosis
- Understand the impact that technological tools, especially intraoperative localization techniques, have had on neurosurgery, as well as the implications that the application of robotic surgery may have in the coming years
- Learn the importance that cost-effectiveness studies are acquiring, becoming familiar with the terminology and concepts used, as well as their applications in the field of neurosurgery
- Develop an in-depth understanding of the importance of postoperative infection in neurosurgery, to acquire infectious prophylaxis guidelines, as well as the management of brain abscesses

### Module 2. Cranioencephalic Trauma. Peripheral Nerve Pathology

- Learn the precise diagnostic indications to correctly evaluate and classify patients with TBI from the point of view of emergency care
- Describe and understand the usefulness of neuromonitoring systems in patients with severe TBI, and correlate the information they provide with the therapeutic algorithms applied in intensive care units
- Acquire in-depth knowledge of the surgical indications in patients with traumatic intracranial lesions, as well as the main prognostic determinants

- Recognize the uniqueness in the management of two specific situations of patients with TBI, such as patients with anticoagulant therapy and pediatric patients
- Learn the concepts of peripheral nerve pathology that may most frequently require neurosurgical evaluation, and the application of new technological advances to its treatment

### Module 3. Vascular Pathology I. Subarachnoid Hemorrhage and Intracranial Aneurysmal Pathology

- Specialize in the basic principles of diagnosis and treatment of subarachnoid hemorrhage, both from a neurosurgical perspective and from the perspective of the intensivist
- Identify the most important complications, their timeline, and basic tools for preventing and treating them
- Learn the clinical characteristics of cerebral aneurysms according to their location and size, correlating it with the clinical presentation and prognosis
- Understand the differential characteristics of certain types of aneurysms according to their etiology
- Discuss the advantages and disadvantages of surgical and endovascular treatment in the treatment of cerebral aneurysms, and know the main indications of each of the therapeutic alternatives depending on the location and shape of the aneurysm
- Gain in-depth knowledge of the main multicenter studies whose results and conclusions have determined the management of unruptured cerebral aneurysms, and how they have modified the choice of the type of treatment

#### **Module 4. Vascular Pathology II. Vascular Malformations and Neurosurgical Treatment of Stroke**

- ♦ Learn to identify the different types of vascular malformations and their differences in morphology and bleeding risk
- ♦ Describe the different therapeutic modalities in the management of vascular malformations, understanding the need for a multidisciplinary approach and the possibility of combining different treatments
- ♦ Define the role of neurosurgery in the treatment of both hemorrhagic and ischemic stroke, providing examples that help to understand the indications for surgery and its role in the overall therapeutic management required for this type of patient

#### **Module 5. Tumor Pathology I**

- ♦ Fully understand the histological and molecular basis of the classification of glial tumors and the prognostic and therapeutic implications derived from it, as well as learning the differential clinical and radiological characteristics of high-grade and low-grade glial tumors
- ♦ Become familiar with the advances that have been adopted in the surgical treatment of glial brain tumors and how their application is decisive in improving patient prognosis
- ♦ Recognize the importance of preserving neurological function in glial tumor surgery and know the tools available in neurosurgery to achieve this goal
- ♦ Learn the role of other adjuvant therapies (radiotherapy and chemotherapy) in the treatment of brain gliomas and their contribution to improving prognosis

#### **Module 6. Tumor Pathology II**

- ♦ Discuss the surgical indications in highly prevalent pathologies in neurosurgery such as metastases and meningiomas and the role of other alternative treatments
- ♦ Acquire in-depth knowledge of the approaches to the cerebellopontine angle in the treatment of acoustic neuroma and other cerebellopontine angle tumors, discuss the advantages and disadvantages of each approach and its indication according to clinical and anatomical variables
- ♦ Analyze the key points that have determined the success of endoscopic approaches from skull base tumors, as well as their application according to each type of tumor lesion
- ♦ Identify the unique characteristics of tumors in specific locations such as those of the intraventricular and pineal region, which determine highly specific diagnostic processes and surgical approaches

#### **Module 7. Functional Neurosurgery**

- ♦ Manage the need for a multidisciplinary approach to epilepsy surgery to achieve excellent results in terms of seizure control and absence of neurological sequelae
- ♦ Learn the main epilepsy conditions that can benefit from surgical treatment and the procedures commonly used in surgical practice
- ♦ Provide the basis for understanding the mechanisms of deep brain stimulation and neuroablative interventions and their indication in the treatment of movement disorders. An important objective of this module is to understand the ongoing evolution of these therapies and to anticipate the direction in which the next advances in this field will be heading
- ♦ Highlight the role of neurosurgical therapies in the treatment of psychiatric illnesses, understanding how advances in other branches of Neurosurgery have been transferred to psychosurgery
- ♦ Specialize in the treatments available in neurosurgery that can be used in the treatment of drug-resistant chronic pain, distinguishing the differences in characteristics and prognosis between neuropathic and nociceptive pain

**Module 8. Pediatric Neurosurgery and CSF Pathology**

- ♦ Acquire in-depth knowledge of the different craniospinal malformations that can occur in infancy
- ♦ Learn the most frequent types of craniosynostosis, with special relevance of postural cranial deformities and management guidelines in routine clinical practice
- ♦ Apply the differentiating features of vascular and tumor pathology specific to children, identifying the most frequent pathologies in this age group and how the patient's age determines the type of treatment applicable, exemplifying it with relevant clinical cases
- ♦ Describe the types of hydrocephalus and how treatment is selected according to the classification of hydrocephalus, identifying the clinical characteristics of the disorders that most frequently present with hydrocephalus in neurosurgical clinical practice

**Module 9. Spinal Pathology. Degenerative Spine Conditions**

- ♦ Use the recommendations of the consensus guidelines published in the medical literature regarding the indications for surgery in the most frequent degenerative lumbar pathology, such as degenerative disc disease, disc herniation, and canal stenosis with or without spondylolisthesis
- ♦ In-depth knowledge of the precise indications for lumbar fusion in spinal degenerative pathology, in order to avoid over-indication of these techniques. Become familiar with the new lumbar fusion techniques as an alternative to the classic posterior approaches
- ♦ Apply the revolution brought about by the use of minimally invasive techniques in spine surgery and the knowledge of sagittal balance and its impact on surgical indications
- ♦ Develop an in-depth understanding of the importance of the choice of surgery in cervical pathology, both in relation to the type of surgery (fusion versus disc prosthesis) in cervical disc herniations and the approach (posterior versus anterior or combined) in cervical spondyloarthritic myelopathy
- ♦ Describe the different types of surgical approaches used in the treatment of dorsal disc herniation and how their use is determined in each particular case by the radiological characteristics and clinical manifestations

**Module 10. Spinal Pathology. Tumor, Fracture, and Infection**

- ♦ Utilize the various classifications used for the evaluation of the post-traumatic spinal cord injury patient and understand their value in prognosis
- ♦ Understand the evolution of the treatment of post-traumatic spinal cord injury and correlate it with its impact on the functional prognosis of the patients
- ♦ Describe the most common types of vertebral fractures, with special attention to the most commonly used classifications and how they determine the type of treatment
- ♦ Manage spinal and intrathecal tumor pathology routinely treated in neurosurgery
- ♦ Manage the treatment guidelines for spondylodiscitis and what are the indications for surgery

# 03 Skills

After passing the assessments on the Professional Master's Degree in Neurosurgery, the professional will have acquired the necessary skills for a quality and updated praxis based on the most innovative didactic methodology





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*Learn about the new tools in Neurosurgery  
to offer better care to your patients”*



## General Skill

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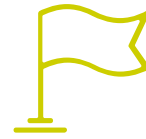
- Possess a comprehensive and up-to-date view of Neurosurgery, as well as of new avenues of development that will be applied in the near future and of what Neurosurgery can contribute to other related specialties in the treatment and diagnosis of multiple pathologies in common

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*Take the opportunity to learn about the latest advances in this field in order to apply it to your daily practice”*







## Specific Skills

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- Know the most commonly used positions for neurosurgical patients
- Perform a correct initial evaluation and classification of patients with TBI
- Know the main indications of each of the therapeutic alternatives depending on the location and shape of the aneurysm
- Understand the different treatment approaches in vascular malformations
- Know how to preserve neurological function in glial tumor surgery
- Identify the unique features of tumors in specific locations
- Understand how advances in other branches of Neurosurgery have translated to psychosurgery
- Acquire in-depth knowledge of the different craniospinal malformations that can occur in infancy
- Learn about the most frequent types of craniosynostosis
- Apply minimally invasive techniques in surgery
- Manage the tumor pathology usually treated in Neurosurgery

# 04

# Course Management

The program's teaching staff includes leading experts in Neurosurgery, who contribute their vast work experience to this specialization program. Additionally, other recognized experts participate in its design and preparation, completing the program in an interdisciplinary manner.



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*Leading experts in Neurosurgery  
have joined forces to share all their  
knowledge in the field with you”*

## Management



### Dr. Fernández Carballal, Carlos

- ♦ Head of the Spinal Pathology Section. Neurosurgery Service
- ♦ Gregorio Marañón General University Hospital
- ♦ Associate Neurosurgery Professor. Faculty of Medicine. Complutense University of Madrid
- ♦ PhD in Surgery from the Autonomous University of Madrid Faculty of Medicine, obtaining the qualification of outstanding cum laude
- ♦ Member of the Spanish Society of Neurosurgery, Member of the Neurorachis Society, Member of the Spanish Society of Functional Neurosurgery (SENE)
- ♦ Master's Degree in Medical and Clinical Management from the Spanish Distance University (UNED)
- ♦ Degree in Medicine (University of Navarra, 1999)

## Professors

### Casitas Hernando, Vicente

- ♦ Neurosurgery Department. Gregorio Marañón General University Hospital, Madrid
- ♦ Specialization Diploma in Cerebral, Medullary and Peripheral Nerve Neuromodulation. University of Granada

### Dr. Darriba Alles, Juan Vicente

- ♦ Attending Physician in the Neurosurgery Department at the Gregorio Marañón General University Hospital (Madrid) since 2012.
- ♦ Specialization in Neurosurgery as Resident Intern at the Central University Hospital of Asturias (Oviedo)
- ♦ PhD student at UAM since 2018: Virtual planning with CAD/CAM technology and intraoperative navigation in the surgical treatment of craniosynostosis
- ♦ Affiliate member of the Spanish Society of Neurosurgery (SENEC).

### Ms. García Hernando, Silvia

- ♦ Neurosurgery Department. Gregorio Marañón General University Hospital
- ♦ Degree in Medicine. Navarra University, Pamplona

### García Leal, Roberto

- ♦ Head of Department. Neurosurgery Department. Gregorio Marañón General University Hospital
- ♦ Master's Degree in Management and Planning of Health Care Centers and Services". Business Excellence School
- ♦ Academic Director of "Grupo CTO", an entity dedicated to Undergraduate and Postgraduate Health Education in Medicine and Nursing
- ♦ Degree in Medicine and Surgery Autonomous University of Madrid (June 1996)

**Dr. Garbizu Vidorreta, José Manuel**

- ♦ Neurosurgery Department. Gregorio Marañón General University Hospital
- ♦ Degree in Medicine from the Faculty of Medicine at the University of Cantabria.

**Dr. González Quarante, Laín Hermes**

- ♦ Neurosurgery Department. Navarra University Clinic
- ♦ Resident tutor in the Neurosurgery Department. Navarra University Clinic
- ♦ Degree in Medicine. University of Barcelona

**Dr. Gil de Sagredo del Corral, Oscar Lucas**

- ♦ Neurosurgery Department. Gregorio Marañón General University Hospital
- ♦ Degree in Medicine and Surgery. Complutense University of Madrid
- ♦ Member of the Spanish Society of Neurosurgery (SENEC)

**Ms. Iza Vallejo, Begoña**

- ♦ Neurosurgery Department. Gregorio Marañón General University Hospital
- ♦ Degree in Medicine from the Faculty of Medicine at the University of the Basque Country
- ♦ Master's Degree in Neurological Oncology. CEU Cardenal Herrera University

**Dr. José Vargas López, Antonio**

- ♦ Neurosurgery Department. Torrecárdenas Hospital
- ♦ Neurosurgery Specialist. Vithas Virgen del Mar de Almería Hospital
- ♦ Degree in Medicine. Complutense University of Madrid

**Ms. Mateo Sierra, Olga**

- ♦ Neurosurgery Professor. Complutense University of Madrid
- ♦ Neurosurgery Department. Gregorio Marañón General University Hospital
- ♦ Degree in Medicine and Surgery, Autonomous University of Madrid

**Dr. Manuel Poveda, José**

- ♦ Neurosurgery Department. Gregorio Marañón General University Hospital
- ♦ Degree in Medicine. Central University of Venezuela

**Ms. Moreno Gutiérrez, Ángela**

- ♦ Neurosurgery Department at the Gregorio Marañón General University Hospital
- ♦ Degree in Medicine and Surgery from the Autonomous University of Barcelona
- ♦ Member of the Spanish Society of Pediatric Neurosurgery

**Mr. Ruiz Juretschke, Fernando**

- ♦ Neurosurgery Professor. Complutense University of Madrid
- ♦ Neurosurgery Department. Gregorio Marañón General University Hospital
- ♦ Degree in Medicine from the Faculty of Medicine at the Complutense University of Madrid
- ♦ Master's Degree in Neurological Oncology

**Dr. Valera Melé, Marc**

- ♦ Neurosurgery Department. Gregorio Marañón General University Hospital
- ♦ Degree in Medicine from the Hospital Clínic de Barcelona

05

# Structure and Content

The structure of the content has been designed by the best professionals in the Neurosurgery sector, with extensive experience and recognized prestige in the profession, backed by the volume of cases reviewed, studied, and diagnosed, and with extensive knowledge of new technologies applied to teaching.





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*This Professional Master's Degree in Neurosurgery contains the most complete and up-to-date scientific program on the market”*

**Module 1. General Concepts in Neurosurgery. Intracranial Infectious Pathology**

- 1.1. Neurosurgical Patient Positioning
- 1.2. Neuroanesthesia
- 1.3. Neurophysiological Monitoring in Neurosurgery
- 1.4. Neurosurgical Patient Intensive Care
  - 1.4.1 Anti-Seizure Prophylaxis for Neurosurgical Patients
- 1.5. Brain Localization System. Stereotaxy
- 1.6. Brain Localization System. Neuronavigation
- 1.7. Application of Robotics in Neurosurgery
- 1.8. Cost-Effectiveness in Neurosurgery
- 1.9. Postoperative Infections in Neurosurgery
- 1.10. Preventing Infection in Neurosurgical Procedures
- 1.11. Cerebral Abscesses. Diagnosis and Treatment

**Module 2. Traumatic Brain Injury. Peripheral Nerve Pathology**

- 2.1. TBI Classification
  - 2.1.1 Mild TBI Evaluation
- 2.2. Neuromonitoring
- 2.3. Treatment of Intracranial Hypertension in Patients with TBI
- 2.4. Indications for Surgery in Cerebral Contusions and Post-Traumatic Cerebral Edema
- 2.5. Acute Epidural Hematoma
  - 2.5.1 Cranial Fractures
- 2.6. Post-Traumatic Subdural Hemorrhage
  - 2.6.1 Acute Subdural Hematoma
  - 2.6.2 Chronic Subdural Hematoma
- 2.7. TBI in Anticoagulated Patients
- 2.8. TBI in Children
- 2.9. Peripheral Nerve Pathology. Brachial Plexus Injuries
- 2.10. Peripheral Nerve Pathology. Peripheral Nerve Entrapment Syndromes





**Module 3. Vascular Pathology I. Subarachnoid Hemorrhage and Intracranial Aneurysmal Pathology**

- 3.1. Subarachnoid Hemorrhage: Clinical, Diagnostic, and Neurological Prognosis
- 3.2. Subarachnoid Hemorrhage Complications
- 3.3. Treating and Managing Patients with Subarachnoid Hemorrhage
- 3.4. Non-Aneurysmal Subarachnoid Hemorrhage
- 3.5. Anterior Circulation Aneurysms
- 3.6. Posterior Circulation Aneurysms
- 3.7. Natural History and Treatment of Unruptured Brain Aneurysm
- 3.8. Surgical Treatment of Intracranial Aneurysms
- 3.9. Endovascular Treatment of Intracranial Aneurysms
- 3.10. Mycotic and Traumatic Aneurysms

**Module 4. Vascular Pathology II. Vascular Malformations and Neurosurgical Treatment of Stroke**

- 4.1. Arteriovenous Malformations: Clinical Features, Natural History, and Classification
- 4.2. Therapeutic Approaches in the Treatment of Arteriovenous Malformations
  - 4.2.1 Surgery
  - 4.2.2 Radiosurgery
  - 4.2.3 Endovascular Treatment
- 4.3. Cavernomatous Malformations
- 4.4. Venous Angiomas and Telangiectasias
- 4.5. Classification and Management of Intracranial Dural Arteriovenous Fistulas
- 4.6. Spinal Dural Arteriovenous Fistulas Classifications and Treatment
- 4.7. Carotid-Cavernous Fistulas
  - 4.7.1 Treatment Options in Carotid-Cavernous Fistulas
- 4.8. Surgical Indication for Hemorrhagic Stroke
- 4.9. Current Status of Neurosurgical Treatment in Ischemic Stroke
  - 4.9.1 Indications for Decompressive Craniectomy in Ischemic Stroke

## Module 5. Tumor Pathology I

- 5.1. Histological and Molecular Classification of Gliomas
- 5.2. Low-Grade Gliomas
- 5.3. High-Grade Gliomas
- 5.4. Therapeutic Algorithm in the Treatment of Gliomas
- 5.5. Advances in the Surgical Treatment of Gliomas
  - 5.5.1 Fluorescence-Guided Surgery
  - 5.5.2 Surgery in Eloquent Areas
- 5.6. The Role of Radiotherapy in the Treatment of Gliomas
- 5.7. Advances in Chemotherapy Treatment of Gliomas
- 5.8. Ependymal Tumors
- 5.9. Neuronal Tumors

## Module 6. Tumor Pathology II

- 6.1. Cerebral Metastases
  - 6.1.1 Surgical Treatment Indications
  - 6.1.2 The Role of Radiotherapy in the Treatment of Cerebral Metastases
- 6.2. Cerebral Meningiomas. Classification and Treatment
- 6.3. Acoustic Neuroma and Other Pontocerebellar Angle Tumors
- 6.4. Posterior Fossa Tumors in Adults
  - 6.4.1 Hemangioblastoma
  - 6.4.2 Medulloblastoma in Adults
- 6.5. Pituitary Adenomas
  - 6.5.1 Indication of Medical and Surgical Treatment
- 6.6. Craniopharyngiomas and Sellar and Suprasellar Tumors
- 6.7. Endoscopic Approaches to the Base of the Skull
- 6.8. Intraventricular Tumors
  - 6.8.1 Surgical Approaches to Intraventricular Tumors
- 6.9. Pineal Region Tumors: Diagnosis and Treatment Strategy
- 6.10. CNS Lymphoma

## Module 7. Functional Neurosurgery

- 7.1. Surgical Indications in Epileptic Patients
  - 7.1.1 Pre-Surgery Evaluation
- 7.2. Surgical Treatments in Epilepsy Surgery
  - 7.2.1 Resective Treatments
  - 7.2.2 Palliative Treatment
- 7.3. Temporal Epilepsy: Surgical Treatment and Prognosis
- 7.4. Extratemporal Epilepsy: Surgical Treatment and Prognosis
- 7.5. Indication for Movement Disorder Surgery
- 7.6. Deep Brain Stimulation
  - 7.6.1 Surgical Technique
- 7.7. Historical Progression of Injury in Movement Disorder Surgery
  - 7.7.1 Ultrasound Lesion Application
- 7.8. Psychosurgery. Indications for Surgical Treatment in Psychiatric Patients
- 7.9. Neurosurgical Procedures in the Treatment of Pain and Spasticity
- 7.10. Trigeminal Neuralgia
  - 7.10.1 Percutaneous Techniques
  - 7.10.2 Microvascular Decompression

## Module 8. Pediatric Neurosurgery and CSF Pathology

- 8.1. Congenital Brain Malformations
  - 8.1.1 Chiari Malformation
- 8.2. Open Spina Bifida. Myelomeningocele
- 8.3. Closed Spinal Dysraphisms
- 8.4. Simple Craniosynostosis
  - 8.4.1 Positional Skull Deformity
- 8.5. Syndromic Craniosynostosis
- 8.6. Vascular Pathology in Children
- 8.7. Supratentorial Tumors in Pediatric Patients
- 8.8. Infratentorial Tumors in Pediatric Patients
- 8.9. Hydrocephalus. Diagnosis and Classification
  - 8.9.1 Posthemorrhagic Hydrocephalus of Prematurity
  - 8.9.2 Chronic Adult Hydrocephalus
- 8.10. Hydrocephalus Treatment

## Module 9. Spinal Pathology. Degenerative Spine Conditions

- 9.1. Lumbar Degenerative Disc Disease
- 9.2. Surgical Indication in Lumbar Disc Herniation and Lumbar Spinal Stenosis
- 9.3. Classification and Treatment of Lumbar Spondylolisthesis
- 9.4. Indications for Lumbar Fusion in Lumbar Degenerative Pathology
- 9.5. Lumbar Fusion Surgical Techniques
- 9.6. Principles of Sagittal Balance and Application to Spine Surgery
- 9.7. Application of Minimally Invasive Surgery in Lumbar Pathology
- 9.8. Herniated Cervical Disc. Surgical Techniques
- 9.9. Cervical Canal Stenosis and Cervical Myelopathy
  - 9.9.1 Criteria for Choosing the Surgical Approach
- 9.10. Herniated Thoracic Disc
  - 9.10.1 Surgical Techniques in the Treatment of Herniated Thoracic Disc

## Module 10. Spinal Pathology. Tumor, Fracture and Infection

- 10.1. Evaluation of Patients with Post-Traumatic Spinal Cord Injury
- 10.2. Treatment of Patients with Post-Traumatic Spinal Cord Injury
- 10.3. Atlas and Axis Fractures
- 10.4. Classifications and Treatment Indications for Subaxial Cervical Fractures
- 10.5. Classifications and Surgical Indications for Dorso-Lumbar Fractures
- 10.6. Primary Spinal Tumors
- 10.7. Metastatic Spinal Tumors
- 10.8. Extramedullary Intradural Spinal Tumors
- 10.9. Intramedullary Spinal Tumors
- 10.10. Infectious Spondylodiscitis
  - 10.10.1 Surgical Treatment Indications
  - 10.10.2 Postoperative Discitis



*This will provide key specialization to advance your career"*

06

# 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"*

## 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. Specialists 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 in the physician's professional 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. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that evaluate real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student 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.

*Professionals will learn through real cases and by resolving 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, more than 250,000 physicians have been trained with unprecedented success in all clinical specialties regardless of surgical load. 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 specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to 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 TECH's 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 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.



#### Surgical Techniques and Procedures on Video

TECH introduces students to the latest techniques, the latest educational advances and to the forefront of current medical techniques. 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 the videos as many times as you like.



#### 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".



#### 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.



# 07 Certificate

The Professional Master's Degree in Neurosurgery guarantees, in addition to the most rigorous and updated training, access to a qProfessional Master's Degree issued by TECH Technological University.



“

*Successfully complete this program  
and receive your university degree  
without travel or laborious paperwork”*

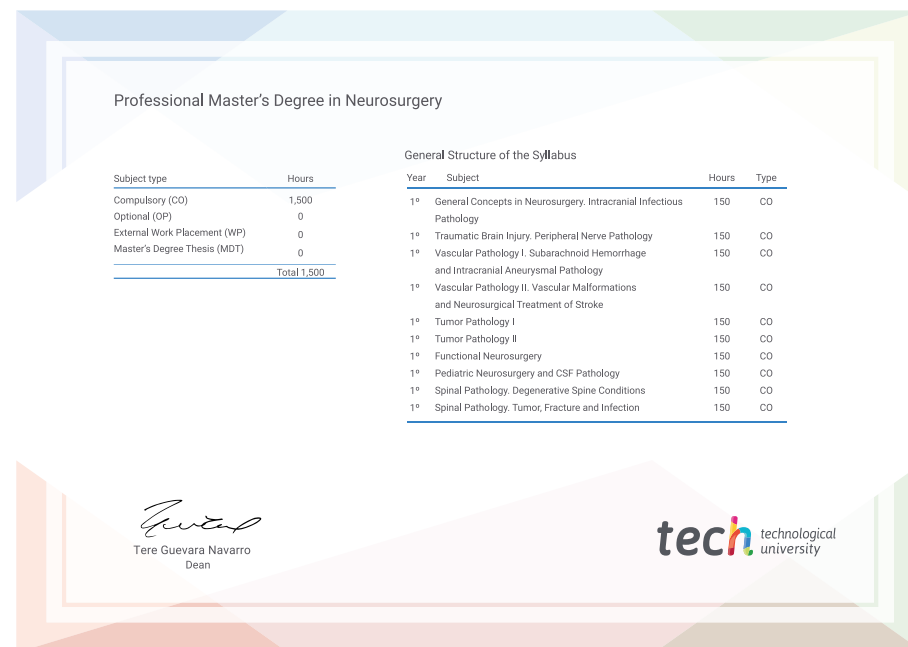
This **Professional Master's Degree in Neurosurgery** contains the most complete and up-to-date scientific program on the market.

After the student has passed the assessments, they will receive their corresponding **Professional Master's Degree** issued by **TECH Technological University** via tracked delivery\*.

The certificate diploma issued by **TECH Technological University** will reflect the qualification obtained in the Professional Master's Degree, and it meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional from career evaluation committees.

Title: **Professional Master's Degree in Neurosurgery**

Official N° of hours: **1,500 h.**



\*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.

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



**Professional Master's  
Degree**

Neurosurgery

Course Modality: Online

Duration: 12 months

Certificate: TECH Technological University

Official N° of hours: 1,500 h.

# Professional Master's Degree

## Neurosurgery

