

Master's Degree

Neuro-Ophthalmology





Master's Degree Neuro-Ophthalmology

- » Modality: online
- » Duration: 12 months
- » Certificate: TECH Global University
- » Credits: 60 ECTS
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: www.techtitute.com/us/medicine/master-degree/master-neuro-ophthalmology

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01 Introduction

The boundaries between ophthalmology and neurology are sometimes blurred. Therefore, Neuro-Ophthalmology tries to define them through the knowledge and treatment of diseases that affect the optical pathway. This forces the professionals of both medical specialties to handle knowledge not strictly included in their field of study. Thus, this program is unique for offering professionals in both areas the possibility to expand and update their knowledge to correctly approach complex Neuro-Ophthalmological problems, which, in many cases, are potentially dangerous to patient's vision or even life. All this, based on the knowledge of a multidisciplinary faculty and the most effective and proven teaching methodology in the market.





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Become a doctor able to detect the various pathologies that affect the optic nerve with this program. In this way you can position yourself at the top of your profession"

Neuro-Ophthalmology is a border discipline between Ophthalmology and Neurology. This means that both ophthalmologists and neurologists need to manage knowledge not strictly included in their specialty. In addition, some of the treatments available correspond to Neurosurgery. All this makes this subspecialty one of the most complex in the approach, which in some cases can only be multidisciplinary.

Therefore, this program will enable the student to correctly approach complex Neuro-Ophthalmological problems, which in many cases are potentially dangerous to the vision or even the life of patients.

On the other hand, the contents of this Master's Degree have been elaborated by ophthalmologists, neurologists and neurosurgeons, with the aim of enriching to the maximum the experience of the student. In this way, the professional will acquire diagnostic and therapeutic skills of the various Neuro-Ophthalmological pathologies known, including COVID-19. In this way, you will be able to make a correct diagnostic approach by knowing the proper use of the most innovative technologies.

Finally, the student will have the necessary knowledge to use the latest medical therapeutic options, make a coherent genetic advice or refer the surgical specialist to facilitate the resolution or improvement of the patient's disease.

All this, taught in an online format and supported with rich multimedia content, which makes this program a fundamental resource in the training of neurologists and ophthalmologists who want to deepen knowledge of this subspecialty, and take their career a step further in this exciting field

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

- ♦ Practical cases presented by experts in medicine.
- ♦ 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 the self-assessment process can be carried out 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



It approaches the pathologies of vision and the central nervous system from a differential perspective thanks to the contents offered by this Master's Degree"

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This program makes a complete review of the subspecialty of Neuro-Ophthalmology. Thus the doctor will learn to treat and diagnose patients of all ages with this type of pathology”

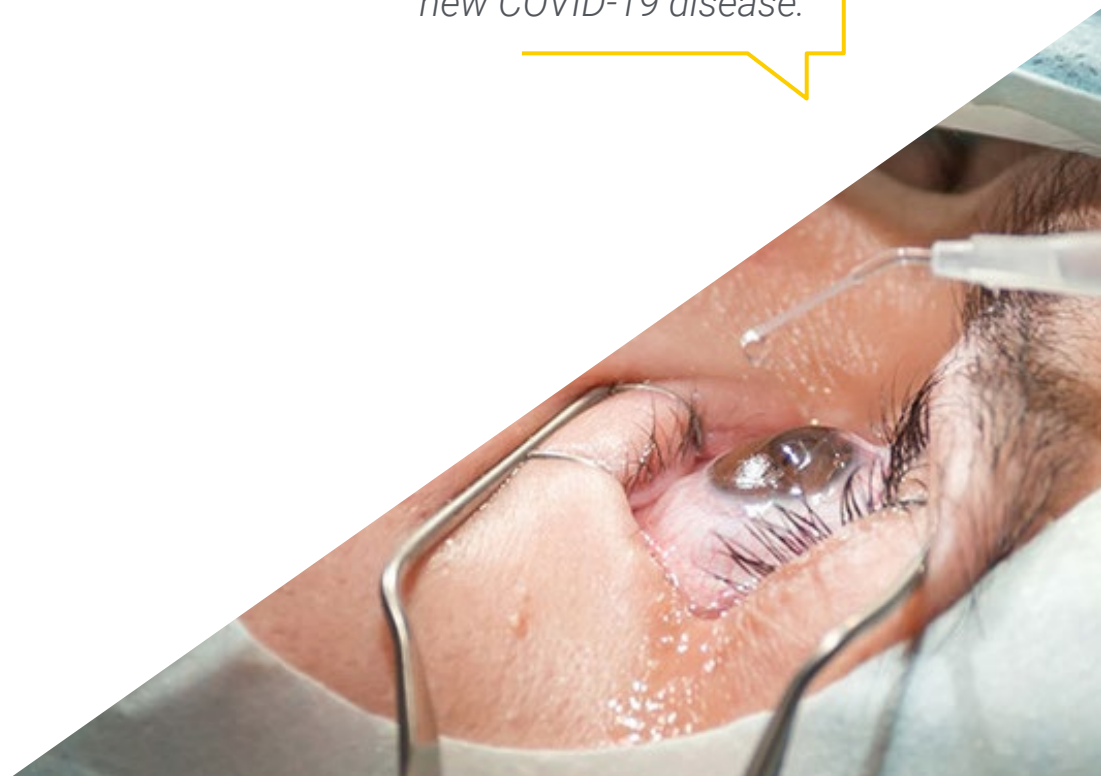
The program's teaching staff includes professionals from the sector who contribute their work experience to this training program, as well as renowned specialists from leading societies and prestigious universities.

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.

TECH's proven teaching methodology will help you reach the top of your profession. Do not hesitate and come to study at this great university.

This Master's Degree is unique for offering the student advanced knowledge in the Neuro-Ophthalmological impact of the new COVID-19 disease.



02 Objectives

TECH, in its maximum capacity to offer a quality education that brings benefits to professionals and society where they carry out their daily practice, has designed this project so that doctors can delve into the different Neuro-Ophthalmological pathologies from an eminently practical perspective. It is, therefore, a unique opportunity that will allow them to specialize in a growing sector with the guarantee of holding a degree issued by the one of the largest Digital Universities in the world.



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If your goal is to become a better doctor, able to offer novel approaches to neurological pathologies, then this Master's Degree is for you"



General Objective

- Delve into the diagnostic techniques available in Neuro-Ophthalmology
- Delve into the anatomical and physiological knowledge necessary to understand the pathologies that will be developed in the following modules
- Develop nuclear and infranuclear Neuro-Ophthalmological pathologies
- Train the student for the identification and treatment of Neuro-Ophthalmological pathologies with supranuclear origin
- Make known the pathologies associated with pupillary and optic nerve alterations
- Expand knowledge about COVID-19 and its impact on Neuro-Ophthalmology
- Delve into the different types of headaches with origin or eye symptoms
- Delve into vascular pathologies, both obstructive, inflammatory, malformative and tumor optic pathway
- Provide the necessary knowledge for the Neuro-Ophthalmologist on the primary alterations of ocular motility and its therapeutic options
- Make known the Neuro-Ophthalmological pathologies that may occur in pediatric patients, their diagnostic approach and treatment
- Train students who have completed the previous modules to perform a correct diagnostic strategy, through the appropriate selection of tests to be performed, and identify the different differential diagnoses from the symptomatology referred to by the patient



Specific Objectives

Module 1. Medical History and Examination

- Delve into its current situation and the future lines of knowledge that open in this field from now on
- Delve into the Neuro-Ophthalmological anamnesis
- Promote the acquisition of the necessary skills for the examination of the Neuro-Ophthalmological patient
- Develop the possibilities offered by diagnostic tests currently available

Module 2. Embryology, Anatomy and Physiology

- Delve into the bone, vascular and muscular anatomy that may be involved in the various Neuro-Ophthalmological pathologies
- Describe the anatomical particularities of the visual pathway and its involvement in image perception

Module 3. Nuclear and Infranuclear Motility Disorders

- Delve into the etiology, diagnosis and treatment of paralysis of oculomotor cranial pairs
- Delve into the characteristics of the affectations of pairs V and VII
- Perform a diagnostic and therapeutic approach to the different hyperkinetic facial disorders that may occur
- Facilitate in-depth knowledge of myopathies with ophthalmological repercussions

Module 4. Supranuclear Disorders of Motility Nystagmus

- ♦ Learn oculomotor alterations originating in the brain stem from an anatomical and pathophysiological point of view
- ♦ Make known the cerebellar and vestibular origin alterations that produce Neuro-Ophthalmological alterations
- ♦ Develop the ophthalmological repercussions of certain complex neurological diseases such as phacomatosis, Parkinson's disease, etc.
- ♦ Train the student to diagnose and classify the different types of nystagmus and other oscillatory eye movements

Module 5. Pupils. Optic Nerve

- ♦ Define concepts of pupillary anisocoria and reactivity and associated neurological pathologies
- ♦ Develop pathologies of vascular, inflammatory, infiltrative and metabolic origin of the optic nerve
- ♦ Approach the visual impact of traumatic optic nerve damage

Module 6. Neuro-Ophthalmological manifestations of COVID-19. Headaches and Cranial Neuralgia

- ♦ List the Neuro-Ophthalmological alterations described so far in COVID patients
- ♦ Train the student for a correct diagnostic and therapeutic approach to headaches with ocular origin or symptomatology

Module 7. Vascular and Tumor Pathology

- ♦ Develop different vascular alterations with visual impairment
- ♦ Delve into the etiology, clinical and treatment of intracranial hypertension
- ♦ Approach the visual repercussion of different neoplasms of the visual pathway

Module 8. Strabismus

- ♦ Define specific concepts of visual development with impact on ocular motility
- ♦ Develop the clinic and treatment of alterations of ocular statics and mobility, both horizontal and vertical or compound
- ♦ Raise awareness of both surgical and non-surgical treatment options

Module 9. Pediatric Neuro-Ophthalmology

- ♦ Delve into normal and abnormal visual development
- ♦ Delve into specific Neuro-Ophthalmological examination techniques for pediatric patients
- ♦ Train to identify the possible anatomical or functional developmental alterations that may be found in pediatric patients
- ♦ Develop the optic nerve pathologies that can occur in childhood

Module 10. Diagnostic Strategies and Decision Trees

- ♦ Delve into the knowledge acquired so far in the Master's Degree program
- ♦ Identify Neuro-Ophthalmological pathologies from symptomatology and semiology



Achieve your professional goals by studying at a university that offers you the most complete and up-to-date academic tools on the market"

03 Skills

One of the main goals of this Master's Degree is that, after having passed the assessments it contemplates, the physicians will have a set of diagnostic and therapeutic skills for the various known Neuro-Ophthalmological pathologies, including COVID-19. In this way, they will be able to perform a correct diagnostic approach through the knowledge of the appropriate use of technologies applied to professional practice. Therefore, the set of skills, tools and knowledge that the physicians will have after completing the program will enable them to practice according to the highest-quality standards and in the most prestigious hospitals in the world.



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TECH's goal is to help physicians achieve the highest quality in their daily processes. In this way, we not only contribute to the quality of care, but also to the forging of a better society"

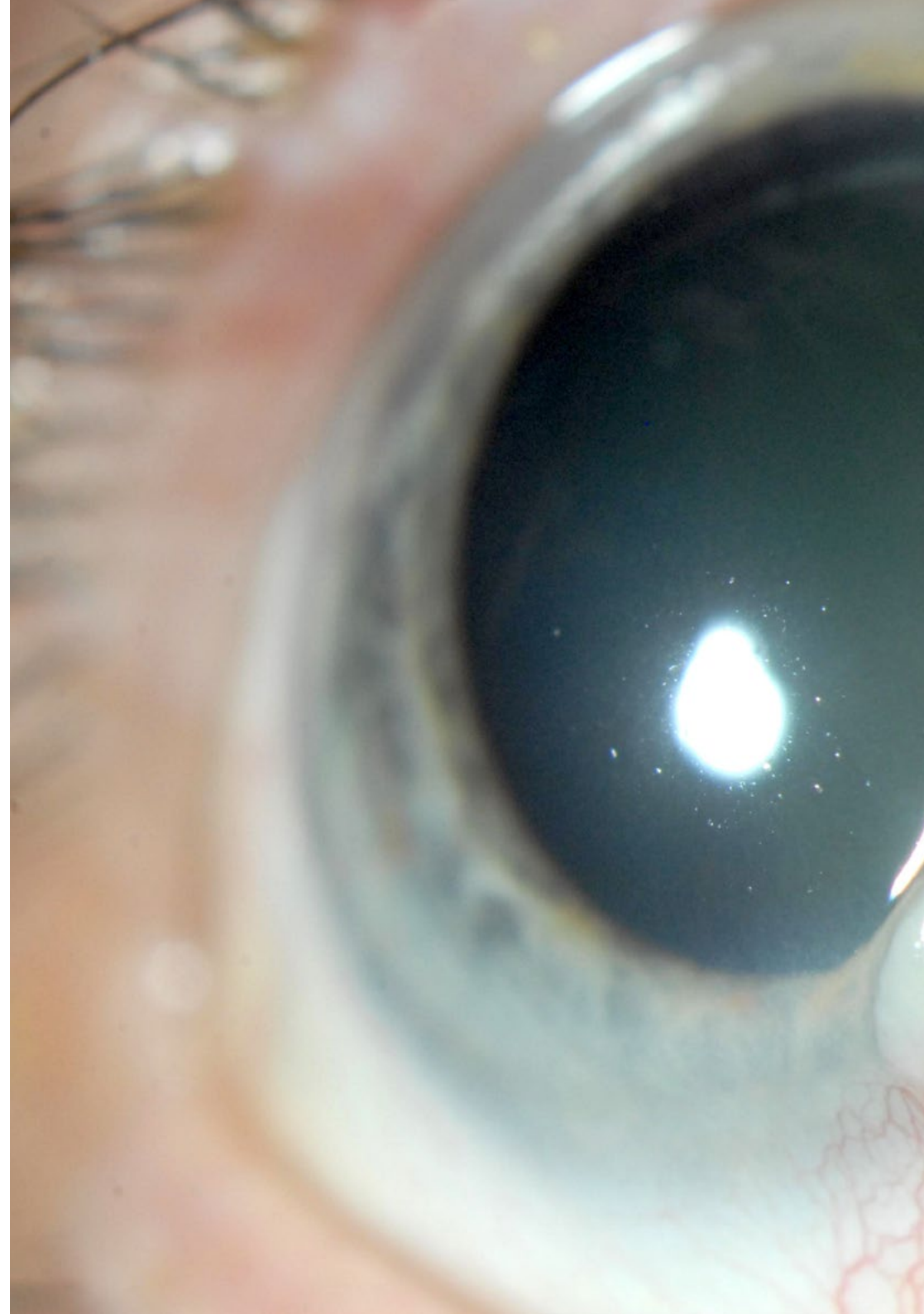


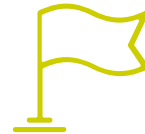
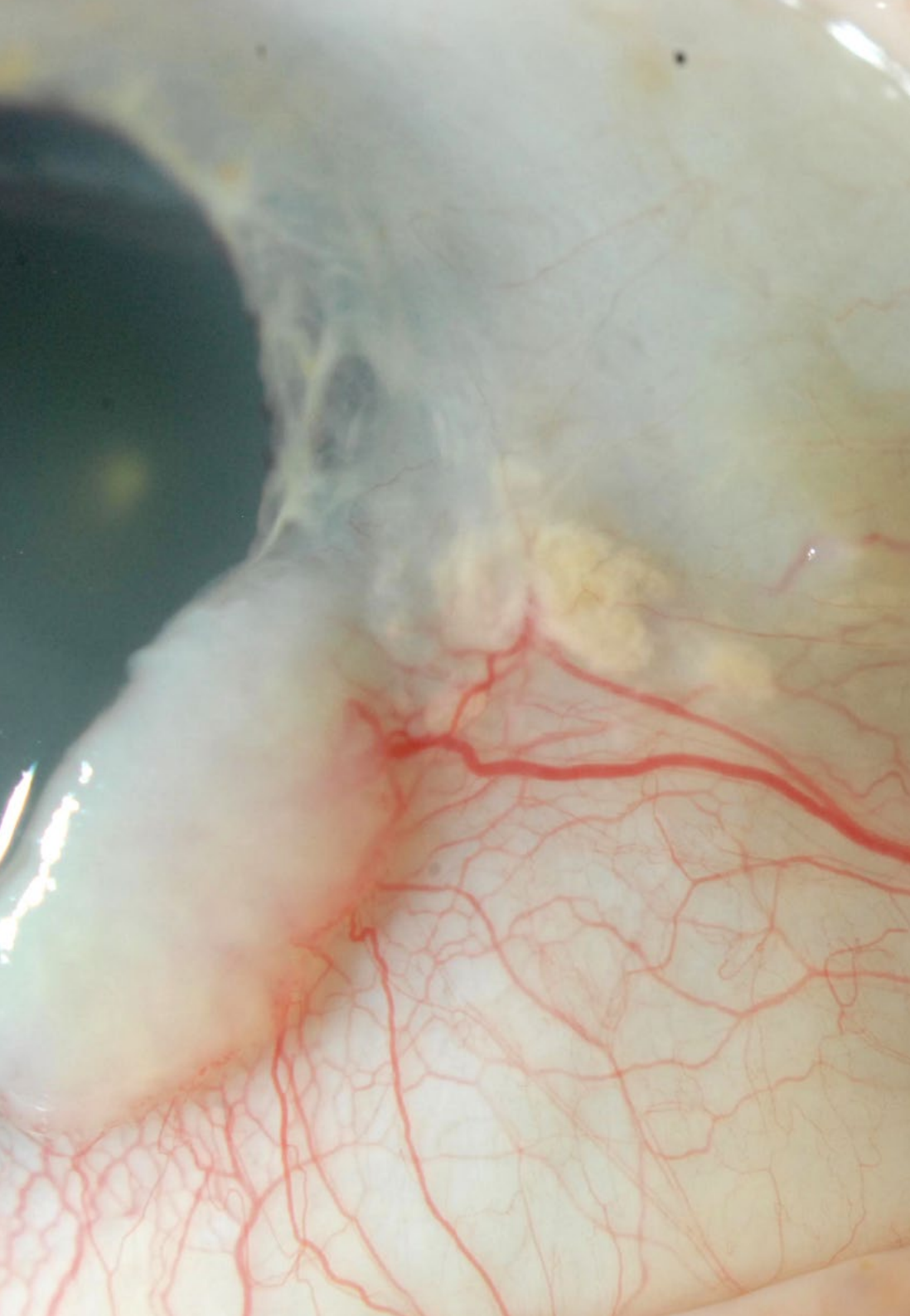
General Skill

- ♦ To enable the student to correctly approach complex Neuro-Ophthalmological problems, which in many cases are potentially dangerous for the vision or even the life of patients

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Don't miss this great opportunity to improve your knowledge and become a better doctor by studying at TECH"





Specific Skills

- ♦ Acquire diagnostic and therapeutic skills for the various known Neuro-Ophthalmological pathologies
- ♦ Delve into the correct performance of a Neuro-Ophthalmological test and the most advanced diagnostic techniques available today
- ♦ Possess in-depth knowledge of Neuro-Ophthalmological pathologies in childhood
- ♦ Be aware of the implications of COVID-19 in Neuro-Ophthalmological pathologies
- ♦ Perform a correct diagnostic approach through knowledge of the proper use of the most innovative technologies
- ♦ Acquire the necessary knowledge to use the latest medical therapeutic options
- ♦ Be able to make a coherent genetic counseling or referral to a surgical specialist to facilitate the resolution or improvement of the patient's disease
- ♦ Know the different pathologies and the diagnostic and therapeutic techniques currently available
- ♦ Know the different existing pupillary alterations
- ♦ Know how to diagnose the different pathologies associated with the optic nerve

04

Course Management

For this program, TECH has assembled the most comprehensive group of experts in the field of Ophthalmology and Neurology. In this way, the students are assured that they will learn from the experience and knowledge of the best professionals in the industry. Thus, this Master's Degree becomes a unique opportunity for growth and consolidation only within the reach of physicians who are truly committed to their work.



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A group of experts of national and international prestige will guide you throughout your learning process"

Management



Dr. Luque Valentín-Fernández, María Luisa

- ♦ Head of the Ophthalmology Service of the El Escorial University Hospital, Madrid (HUEE)
- ♦ Professor of Ophthalmology in the degree of Medicine at the Francisco de Vitoria University, Madrid
- ♦ Degree in Medicine and Surgery from the Autonomous University of Madrid
- ♦ MIR specialist in Ophthalmology from the Gregorio Marañón University Hospital, Madrid
- ♦ Doctor in Medicine and Surgery from the Complutense University of Madrid
- ♦ Master in Healthcare Quality from the Rey Juan Carlos University of Madrid
- ♦ Postgraduate Diploma in Design and Statistics in Health Sciences, Autonomous University of Barcelona
- ♦ President of the HUEE Hospital Continuing Training Commission
- ♦ Responsible for Ongoing Hospital Training HUEE
- ♦ Quality Coordinator of HUEE

Professors

Dr. Celdrán Vivancos, Diego

- ♦ Head of the pediatric and adult neuro-ophthalmology section at IMO Grupo Miranza
- ♦ Optional Area Specialist in the Neuro-Ophthalmology section
- ♦ Bachelor of Medicine from the University of Murcia
- ♦ Doctoral candidate in Medicine and Surgery from the Autonomous University of Madrid: "Drusen of the optic nerve, complications and evolutionary comparison between children and adults". Tutored by: Dra. Susana Noval and Dra. Inés Contreras. Ongoing project
- ♦ Ophthalmo-genetics course, Hospital La Paz de Madrid
- ♦ Course on Retinoblastoma, Hospital La Paz in Madrid

Dr. González Martín-Moro, Julio

- ♦ Ophthalmologist at the Alcalá de Henares University Hospital
- ♦ Professor of Ophthalmology at the Francisco de Vitoria University and CTO Medicine
- ♦ Degree in Medicine and Surgery from the Autonomous University of Madrid
- ♦ Specialization in ophthalmology at the Ramón y Cajal University Hospital in Madrid
- ♦ Master in Clinical Research Methodology from the Autonomous University of Barcelona
- ♦ Reviewer of the journals Ophthalmology, European Journal of Ophthalmology, Clinical and experimental Ophthalmology

Dr. García Basterra, Ignacio

- ♦ Facultative Specialist in the Area of the Ophthalmology Service of the Virgen de la Victoria University Clinic Hospital in Malaga
- ♦ Optional Specialist in the Area of the Ophthalmology Service of the Virgen de la Victoria University Clinic Hospital in Malaga
- ♦ Head of the Neurophthalmology and Adult Strabismus Unit at the Virgen de la Victoria University Clinic Hospital in Malaga
- ♦ Doctor of Medicine and Surgery from the University of Malaga
- ♦ MIR Specialist in Neurology, Virgen de las Nieves University Hospital in Granada
- ♦ Bachelor of Medicine and Surgery from the University of Granada
- ♦ MIR Specialist in Ophthalmology, Virgen de la Victoria University Hospital Málaga
- ♦ Member of the Neurophthalmology group of the Andalusian Ophthalmology Society

Dr. Domingo Gordo, Blanca

- ♦ Assistant Physician of the Ocular Motility Unit of the San Carlos Clinical Hospital. Madrid
- ♦ Member of the Neurophthalmology Unit of the San Carlos Clinical Hospital. Madrid
- ♦ Assistant Physician of the Ocular Motility Unit of the San Carlos Clinical Hospital. Madrid
- ♦ Ophthalmologist responsible for Strabology and Neurophthalmology at AVER Ophthalmology Clinic
- ♦ Member of the Neurophthalmology Unit of the San Carlos Clinical Hospital. Madrid
- ♦ Doctor in Ophthalmology from the Complutense University of Madrid
- ♦ Bachelor of Medicine and General Surgery. Complutense University of Madrid
- ♦ Ophthalmology specialist. Specialist in Family and Community Medicine. Via MIR
- ♦ Member of scientific societies: Spanish Society of Ophthalmology (SEO), Spanish Society of Strabology and Pediatric Ophthalmology (SEEOP), American Academy of Ophthalmology (AAO)

Dr. Noval Martin, Susana

- ♦ Children's Ophthalmologist at the Neuro-ophthalmology Unit of the Hospital Universitario La Paz. Madrid
- ♦ Degree in Medicine from the Autonomous University of Madrid
- ♦ Ophthalmology Specialty from the Ramón y Cajal University Hospital, Madrid
- ♦ Master in Neuroimmunology from the Autonomous University of Barcelona
- ♦ Master in Medical Management and Clinical Management from UNED

Dr. Fernández Jiménez-Ortiz, Héctor

- ♦ Ophthalmologist, strabismus and neuro-ophthalmology section at the Hospital Universitario de Fuenlabrada and at IMO–Madrid
- ♦ Reviewer of the journal Archives of the Spanish Ophthalmology Society
- ♦ Doctor of Medicine Cum Laude mention from the Complutense University of Madrid
- ♦ Degree in Medicine from the Autonomous University of Madrid
- ♦ Master in Clinical Management and Medical and Assistance Direction from the Cardenal Herrera University
- ♦ University Specialist in Health Informatics and Telemedicine from UNED

Dr. Santos Bueso, Enrique

- ♦ Associate Professor of Ophthalmology at the Complutense University of Madrid
- ♦ Optional specialist in the area of the Ophthalmology service in the Neuro-ophthalmology Unit of the Hospital Clínico San Carlos de Madrid
- ♦ Associate Professor of Ophthalmology at the Complutense University of Madrid
- ♦ Bachelor of Medicine and Surgery from the University of Extremadura
- ♦ Doctor of Medicine from the University of Extremadura
- ♦ Specialist via MIR in Family and Community Medicine (Hospital Infanta Cristina de Badajoz) and in Ophthalmology (Hospital Clínico Universitario San Carlos de Madrid)

Dr. De las Rivas Ramírez, Nieves

- ♦ Facultative specialist in the area of Ophthalmology at the Hospital de la Serranía de Ronda, Málaga
- ♦ Graduated in Medicine and Surgery. Zaragoza's University
- ♦ Facultative specialist in the area of Ophthalmology at the Hospital de la Serranía de Ronda, Málaga
- ♦ PhD candidate at the University of Malaga
- ♦ Ophthalmology specialist. Regional University Hospital of Malaga

Dr. González Manrique, María del Mar

- ♦ Head of the Ophthalmology Service of the University Hospital of Móstoles
- ♦ Adjunct Physician of the Hospital de Móstoles, Madrid, Spain
- ♦ Adjunct Physician of the Hospital Universitario de La Princesa, Madrid, Spain
- ♦ Bachelor of Medicine and Surgery. Autonomous University of Madrid
- ♦ Ophthalmology specialist. Ramón y Cajal University Hospital, Madrid
- ♦ Research aptitude. University of Alcalá
- ♦ Master in Medical Management and Clinical Management. UNED

Dr. Díaz Otero, Fernando

- ♦ Specialist in the Neurology Service of the Hospital General Universitario Gregorio Marañón, Madrid
- ♦ Graduate in medicine and surgery. Autonomous University of Madrid
- ♦ Specialist in Neurology from the Gregorio Marañón University Hospital
- ♦ Master in Cerebrovascular Pathology from the Complutense University of Madrid



Dr. Cabrejas Martínez, Laura

- ♦ Adjunct Doctor of Ophthalmology. Children's ophthalmology, strabismus and neuro-ophthalmology section. Jiménez Díaz Foundation. Madrid
- ♦ Adjunct Doctor of Ophthalmology. Children's ophthalmology, strabismus and neuro-ophthalmology section. Ruber Juan Bravo Hospital. Madrid
- ♦ Associate Professor of Ophthalmology of the Degree of Medicine. European University of Madrid
- ♦ Bachelor of Medicine and Surgery. University of Salamanca
- ♦ MIR specialist in Ophthalmology at the Ramón y Cajal University Hospital. Madrid
- ♦ Doctor of Medicine and Surgery from the University of Alcalá
- ♦ Bachelor of Medicine and Surgery. University of Salamanca
- ♦ Master in Clinical Ophthalmology. CEU. Cardenal Herrera University
- ♦ University expert in ocular pathologies and treatment, glaucoma and pediatric ocular pathology, ophthalmic surgery, uveitis and retina. CEU. Cardenal Herrera University
- ♦ MIR specialist in Ophthalmology at the Ramón y Cajal University Hospital. Madrid



Make the most of this opportunity to learn about the latest advances in this subject to apply it to your daily practice"

05

Structure and Content

The structure and contents of this Master's Degree have been designed following the criteria of topicality and maximum scientific rigor. All this, with the aim of bringing to the physician a didactic material adapted to the demands of this area of work to become a highly useful tool and a guide for action that supports the processes of diagnosis, approach and treatment in the area of Neuro-Ophthalmology.



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*Learn from the best didactic
material and become an expert
in Neuro-Ophthalmology”*

Module 1. Medical History and Examination

- 1.1. Current and Future Situation of Neuro-Ophthalmology
 - 1.1.1. New Diagnostic and Therapeutic Methods
 - 1.1.2. Utility of Information Technologies: Telemedicine, Artificial Intelligence
 - 1.1.3. Neuro-Ophthalmology in Space Travel
- 1.2. Anamnesis and Examination
 - 1.2.1. Medical History
 - 1.2.2. Eye Function Examination
- 1.3. Anamnesis and Examination II
 - 1.3.1. Contrast Sensitivity
 - 1.3.2. Chromatic Vision
 - 1.3.3. Stereopsis
 - 1.3.4. Fundus Examination
- 1.4. Ocular Motility
 - 1.4.1. Accommodation
 - 1.4.2. Convergence
 - 1.4.3. Pupil Examination
 - 1.4.4. Fundus Examination
- 1.5. Campimetry
 - 1.5.1. Utility of Campimetry
 - 1.5.2. Types of Campimetry
- 1.6. Optical Coherence Tomography (OCT)
 - 1.6.1. Function and Types of the OCT
 - 1.6.2. Utility of OCT in the Detection of Neurological and Neuro-Ophthalmological Pathology
- 1.7. Electrophysiology
 - 1.7.1. Visual Evoked Potentials
 - 1.7.2. Electroretinogram
 - 1.7.3. Electrooculogram
- 1.8. Neuroimaging 1: CAT
- 1.9. Neuroimaging 2: Nuclear Magnetic Resonance (NMR)
- 1.10. Neuroimaging 3: Ultrasound



Module 2. Embryology, Anatomy and Physiology

- 2.1. Embryology of the Visual System
 - 2.1.1. Columnar Model of the Embryology of the Visual System and CNS
 - 2.1.2. Prosomeric Model of the Embryology of the Visual System and CNS
 - 2.1.3. Ocular Teratology
- 2.2. Bone Anatomy: The Skull
- 2.3. Vascular Anatomy
- 2.4. Muscular Anatomy
- 2.5. Afferent Visual Pathway
 - 2.5.1. Prechiasmatic Optic Pathways
 - 2.5.2. Postchiasmatic Optic Pathways
- 2.6. Efferent Pathway
 - 2.6.1. Anatomy of the Cranial Nerve Pairs
 - 2.6.2. Brainstem Motor Nuclei
- 2.7. Sensory Innervation
- 2.8. Motor Innervation
- 2.9. Ocular Autonomic Nervous System
 - 2.9.1. Sympathetic System
 - 2.9.2. Parasympathetic System
- 2.10. Topographic Diagnosis of Visual Field Disturbances

Module 3. Nuclear and Infranuclear Motility Disorders

- 3.1. Horner Syndrome
 - 3.1.1. Anatomical Bases and Pathophysiology of the Oculosympathetic Pathway
 - 3.1.2. Causes of Horner's Syndrome
 - 3.1.3. Clinical Findings
 - 3.1.4. Diagnosis
 - 3.1.5. Treatment
- 3.2. Paralysis of the III Pair
 - 3.2.1. Anatomical and Pathophysiology Bases
 - 3.2.2. Etiology
 - 3.2.3. Clinical Findings
 - 3.2.4. Aberrant Regeneration of the III Cranial Nerve

- 3.2.5. Diagnosis
- 3.2.6. Treatment
- 3.3. Paralysis of the IV Pair
 - 3.3.1. Anatomical and Pathophysiology Bases
 - 3.3.2. Etiology
 - 3.3.3. Clinical Findings
- 3.4. Paralysis of the VI Pair
 - 3.4.1. Anatomical and Pathophysiology Bases
 - 3.4.2. Etiology
 - 3.4.3. Clinical Findings
- 3.5. Paralysis of the VII Pair
 - 3.5.1. Anatomical and Pathophysiology Bases
 - 3.5.2. Etiology
 - 3.5.3. Clinical Findings
- 3.6. Treatment of Facial Paralysis
 - 3.6.1. Management of Facial Paralysis
 - 3.6.2. Prognosis
 - 3.6.3. New Treatments
- 3.7. Combined Paralysis of the cranial Nerves
 - 3.7.1. Keys in the Diagnosis of Multiple Cranial Paralysis
 - 3.7.2. Most Common Causes of Multiple Cranial Pair Involvement
 - 3.7.3. Useful Complementary Tests and Diagnostic Algorithm
- 3.8. Other Neuropathies
 - 3.8.1. Hyperkinetic Facial Disorders
 - 3.8.2. Infectious and Immune-Mediated Neuropathies
 - 3.8.3. Trauma and Tumors
- 3.9. Myopathies I
 - 3.9.1. Myasthenia Gravis
 - 3.9.2. Pseudomyasthenic Syndromes
- 3.10. Myopathies II
 - 3.10.1. Chronic Progressive External Ophthalmoplegia
 - 3.10.2. Myotonic Dystrophy

Module 4. Supranuclear Disorders of Motility. Nystagmus

- 4.1. Anatomical Relationships. Paramedian Pontine Reticular Formation (PPRF) and Medial Longitudinal Fasciculus (MLF)
 - 4.1.1. Anatomical Constituents of the Supranuclear Eye Movement
 - 4.1.2. Functional Anatomy of Saccadic and Tracking Movements
 - 4.1.3. Functional Anatomy of Horizontal Versions
 - 4.1.4. Functional Anatomy of Vertical Versions
 - 4.1.5. Functional Anatomy of Convergence/Divergence
 - 4.1.6. Non-Optic or Vestibular Reflexes
- 4.2. Ophthalmological Manifestations in Pathology of the Trunk
 - 4.2.1. Horizontal Gaze Pathology
 - 4.2.2. Vertical Gaze Pathology
 - 4.2.3. Pathology of Convergence and Divergence
- 4.3. Ophthalmological Manifestations in Pathology of the Cerebellum
 - 4.3.1. Localization of Lesions in the Cerebellum According to Ophthalmological Manifestations
 - 4.3.2. Ophthalmologic Manifestations in Cerebellar Vascular Pathology
 - 4.3.3. Ophthalmological Manifestations in Cerebellar Developmental Pathology
- 4.4. Ophthalmological Manifestations in Pathology of the Vestibular System
 - 4.4.1. Ophthalmological Manifestations of Central Oculo-Vestibular Dysfunction
 - 4.4.2. Ophthalmological Manifestations of Peripheral Oculo-Vestibular Dysfunction
 - 4.4.3. Oblique Deflection (Skew)
- 4.5. Ophthalmological Manifestations in Degenerative Neurological and Other Diseases
 - 4.5.1. Parkinson's Disease
 - 4.5.2. Huntington's Disease
 - 4.5.3. Epilepsy
 - 4.5.4. Coma
- 4.6. Phacomatosis
 - 4.6.1. Neurofibromatosis
 - 4.6.2. Tuberous Sclerosis
 - 4.6.3. Von-Hippel-Lindau Disease

- 4.7. Nystagmus
 - 4.7.1. Definition and Pathophysiology
 - 4.7.2. Classification
 - 4.7.3. Examination and Recording Methods
 - 4.7.4. Physiological Nystagmus
- 4.8. Nystagmus in Adults
 - 4.8.1. Vestibular Nystagmus
 - 4.8.2. Eccentric Gaze Nystagmus
 - 4.8.3. Acquired Pendular Nystagmus
 - 4.8.4. Treatment
- 4.9. Nystagmus in Childhood
 - 4.9.1. Sensory Nystagmus
 - 4.9.2. Idiopathic Motor Nystagmus
 - 4.9.3. Nystagmus due to Fusional Maldevelopment
 - 4.9.4. Other Childhood Nystagmus
 - 4.9.5. Diagnostic Protocol
 - 4.9.6. Treatment
- 4.10. Saccadic Intrusions and Oscillations
 - 4.10.1. Saccadic Intrusions
 - 4.10.2. Saccadic Oscillations
 - 4.10.3. Other Ocular Oscillations

Module 5. Pupils. Optic Nerve

- 5.1. Pupillary Assessment
 - 5.1.1. Importance of Proper Pupillary Assessment
 - 5.1.2. Pupillary Reflexes
 - 5.1.3. Accommodation and Convergence
- 5.2. Anisocoria
 - 5.2.1. Physiological Anisocoria
 - 5.2.2. Major Anisocoria in Darkness: Mechanical Anisocoria, Pharmacological Anisocoria, Horner's Syndrome



- 5.3. Greater Anisocoria in Light
 - 5.3.1. Introduction
 - 5.3.2. Iris Lesion
 - 5.3.3. Pharmacological Mydriasis
 - 5.3.4. Tonic Pupil
 - 5.3.5. III Cranial Nerve Paralysis
- 5.4. Alterations of Pupillary Reactivity:
 - 5.4.1. Light-Near Dissociation
 - 5.4.2. Relative Afferent Pupillary Defect
 - 5.4.3. Argyll-Robertson Pupil
 - 5.4.4. Aberrant Regeneration
 - 5.4.5. Other Pupillary Alterations: Benign Episodic Mydriasis
- 5.5. Anatomy and Physiology of the Optic Nerve
 - 5.5.1. Anatomy and Physiology
 - 5.5.2. Intraocular and Intraorbital Optic Nerve
 - 5.5.3. Intracanalicular and Intracranial Optic Nerve
 - 5.5.4. Physiology
- 5.6. Vascular Pathology of the Optic Nerve
 - 5.6.1. Non-Arteritic Ischemic Optic Neuropathy
 - 5.6.2. Arteritic Ischemic Optic Neuropathy
 - 5.6.3. Other Ischemic Optic Neuropathies: Hypovolemia and Diabetic Papillopathy
- 5.7. Inflammatory Pathology of the Optic Nerve
 - 5.7.1. Inflammatory Pathology of the Optic Nerve
 - 5.7.2. Demyelinating Optic Nerve Pathology
 - 5.7.3. Infectious Pathology of the Optic Nerve
 - 5.7.4. Other Inflammatory Neuropathies: Perineuritis, Sarcoidosis and Autoimmune
- 5.8. Infiltrative and Compressive Pathology
 - 5.8.1. Tumor Pathology of the Optic Nerve
 - 5.8.2. Optic Nerve Metastases, Lymphoma and Leukemia
 - 5.8.3. Aneurysms and Compressive Bone Pathology of the Optic Canal

- 5.9. Metabolic and Nutritional Pathology
 - 5.9.1. Metabolic Neuropathies
 - 5.9.2. Nutritional Neuropathies
 - 5.9.3. Toxic Neuropathies
- 5.10. Traumatic Pathology
 - 5.10.1. Direct Trauma
 - 5.10.2. Indirect Trauma
 - 5.10.3. Clinical Management

Module 6. Neuro-Ophthalmological Manifestations of COVID-19. Headaches and Cranial Neuralgia

- 6.1. Neuro-Ophthalmological manifestations of COVID-19 I: Pathogenesis
 - 6.1.1. Characteristics of SARS-CoV-2
 - 6.1.2. Pathogenic Mechanisms
 - 6.1.3. Neurotropism and Autoimmunity
- 6.2. Neuro-Ophthalmological Manifestations of COVID-19 II: Neuropathies
- 6.3. Neuro-Ophthalmological Manifestations of COVID-19 III: Headache. Papillitis
- 6.4. Clinical Approach to Headache
- 6.5. Migraine with Aura
 - 6.5.1. Characteristics of Migraine
 - 6.5.2. Neuro-Ophthalmologic Phenomena Associated to Migraine
- 6.6. Other Primary Headaches with Orbital Pain
- 6.7. Cranial Neuralgia and Neuropathies
- 6.8. Neuro-Ophthalmologic Manifestations and Ocular Pain in Secondary Headaches
- 6.9. Diagnosis of Headaches
 - 6.9.1. Diagnostic Techniques
 - 6.9.2. Indications
 - 6.9.3. Referral Criteria
- 6.10. Treatment of Headaches
 - 6.10.1. Anesthetic Blocks
 - 6.10.2. Botulinum Toxin
 - 6.10.3. Neurostimulation

Module 7. Vascular and Tumor Pathology

- 7.1. Vascular Pathology I
 - 7.1.1. Aneurysms
 - 7.1.2. Arteriovenous Malformations
 - 7.1.3. Carotid-Cavernous Fistulas
- 7.2. Vascular Pathology II
 - 7.2.1. Temporal Arteritis
 - 7.2.2. Vasculitis
 - 7.2.3. Carotid Dissection
- 7.3. Visual Disturbances in Stroke
 - 7.3.1. Parietal Lobe Involvement
 - 7.3.2. Temporal Lobe Involvement
 - 7.3.3. Occipital Lobe Involvement
 - 7.3.4. Bihemispheric Syndromes
- 7.4. Optic Nerve Tumors I
 - 7.4.1. Meningioma
- 7.5. Optic Nerve Tumors II
 - 7.5.1. Glioma
- 7.6. Chiasm Pathology I
 - 7.6.1. Pituitary Tumors
- 7.7. Chiasm Pathology II
 - 7.7.1. Cysts
 - 7.7.2. Metastatic Diseases
 - 7.7.3. Sphenoidal Mucocoele
 - 7.7.4. Trauma
 - 7.7.5. Empty Sella Syndrome
 - 7.7.6. Other Alterations
- 7.8. Suprasellar Neoplasms
 - 7.8.1. Craniopharyngioma
 - 7.8.2. Other Tumors of the Sellar and Suprasellar Region

- 7.9. Intracranial Hypertension
 - 7.9.1. Etiology
 - 7.9.2. Symptoms
 - 7.9.3. Signs
 - 7.9.4. Diagnosis
 - 7.9.5. Differential Diagnosis
- 7.10. Treatment of Intracranial Hypertension
 - 7.10.1. Weight Loss
 - 7.10.2. Medical Treatment
 - 7.10.3. Surgical Management
 - 7.10.4. Prognosis

Module 8. Strabismus

- 8.1. Applied Anatomy of the Extraocular Musculature
- 8.2. Development of the Visual System
- 8.3. Exploration
 - 8.3.1. Assessment of Fusion, Suppression and Diplopia
 - 8.3.2. Parks Test. Lancaster Screen
 - 8.3.3. Differential Diagnosis between Strabismus and Neurological Disorder
- 8.4. Amblyopia
 - 8.4.1. Strabismic Amblyopia
 - 8.4.2. Amblyopia due to Anisometropia
 - 8.4.3. Amblyopia due to Media Opacity
- 8.5. Esotropia
 - 8.5.1. Acute Esotropia
 - 8.5.2. Age-Related Esotropia
- 8.6. Exotropia
 - 8.6.1. Acute Exotropia
- 8.7. Vertical Strabismus
 - 8.7.1. Differential Diagnosis
 - 8.7.2. *Sagging Eye*

- 8.8. Combined and Restrictive Syndromes
 - 8.8.1. Duane Syndrome. Brown Syndrome
 - 8.8.2. Myopic Myopathy
 - 8.8.3. Thyroid Orbitopathy
 - 8.8.4. Iatrogenic Myopathy
- 8.9. Refractive and Orthoptic Treatment
 - 8.9.1. Optical Correction
 - 8.9.2. Correction with Prisms
- 8.10. Surgical Management
 - 8.10.1. Botulinum toxin
 - 8.10.2. Extraocular Muscles Surgery

Module 9. Pediatric Neuro-Ophthalmology

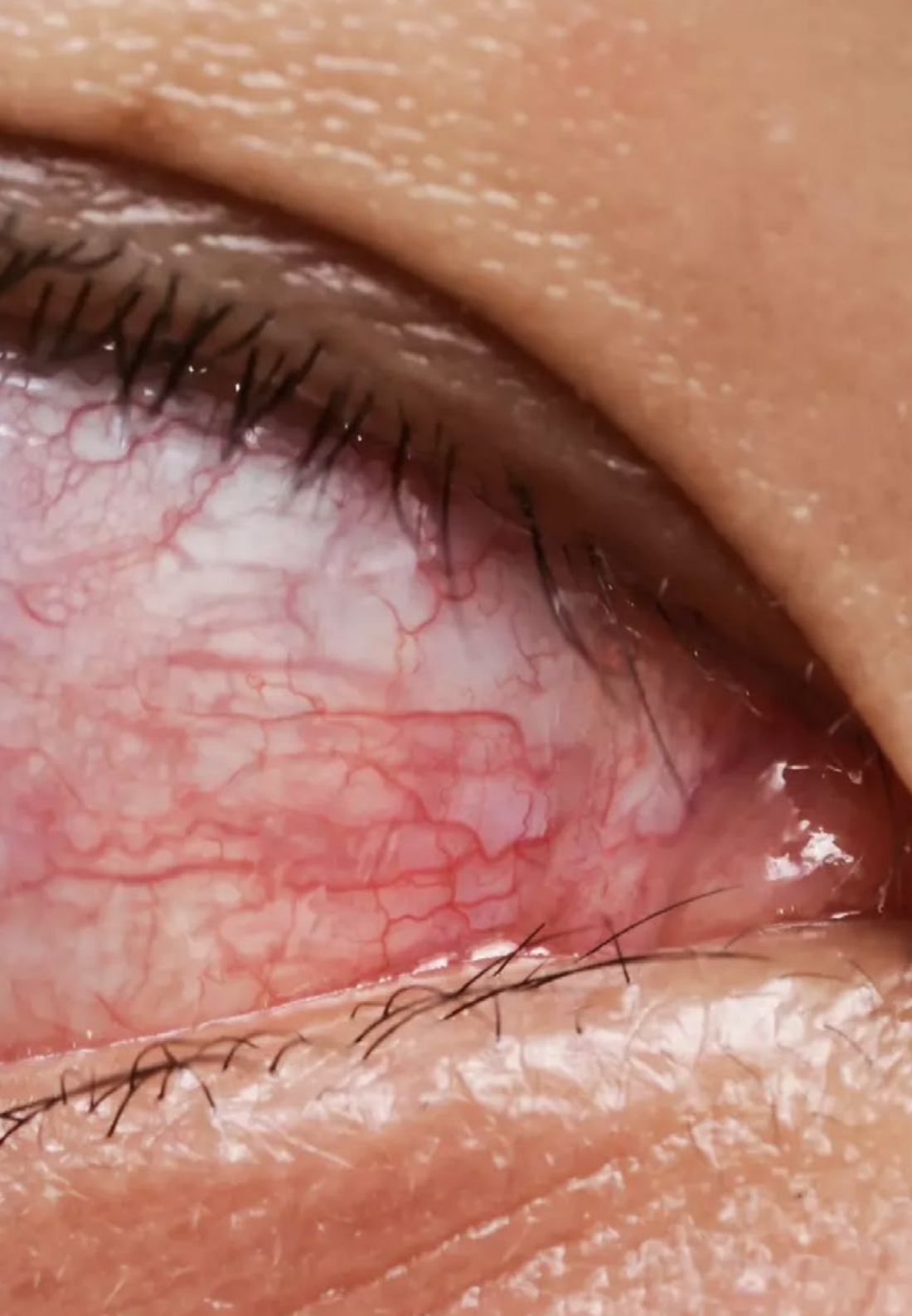
- 9.1. Neuro-Ophthalmologic Examination in Children
 - 9.1.1. Examination Techniques in the Pediatric Patient
 - 9.1.2. Electrophysiology
- 9.2. The child With Low Vision. Delayed Visual Maturation
- 9.3. Cerebral Visual Impairment
- 9.4. Congenital Anomalies of the Anterior Optic Pathway
 - 9.4.1. Hypoplasia
 - 9.4.2. Colobomas and Optic Pits
 - 9.4.3. Optic Nerve Drusen
- 9.5. Papillary Effacement
 - 9.5.1. Intracranial Hypertension (IH) in Children
- 9.6. Optic Neuropathies in Childhood I
 - 9.6.1. Inflammatory
 - 9.6.2. Pathology
- 9.7. Optic Neuropathies in Childhood II Hereditary
 - 9.7.1. Dominant Optic Atrophy
 - 9.7.2. Leber Optic Neuropathy
- 9.8. Optical Atrophy and Papillary Excavation in the Child

- 9.9. Pediatric Tumor Pathology
 - 9.9.1. Primary Tumors of the Optic Nerve
 - 9.9.2. Midline Tumors
 - 9.9.3. Posterior Fossa Tumors
- 9.10. Oculomotor Apraxia

Module 10. Diagnostic Strategies and Decision Trees

- 10.1. Blurred Vision, Transient Loss of Vision
 - 10.1.1. Introduction
 - 10.1.2. Etiology
 - 10.1.3. Differential Diagnosis
 - 10.1.4. Decision Tree
- 10.2. Campimetric Alteration
 - 10.2.1. Introduction
 - 10.2.2. Etiology
 - 10.2.3. Differential Diagnosis
 - 10.2.4. Decision Tree
- 10.3. Swollen Optic Nerve (Papilledema)
 - 10.3.1. Introduction
 - 10.3.2. Etiology
 - 10.3.3. Differential Diagnosis
 - 10.3.4. Decision Tree
- 10.4. Double Vision (Diplopia)
 - 10.4.1. Introduction
 - 10.4.2. Etiology
 - 10.4.3. Differential Diagnosis
 - 10.4.4. Decision Tree
- 10.5. Image Movement
 - 10.5.1. Introduction
 - 10.5.2. Etiology
 - 10.5.3. Differential Diagnosis
 - 10.5.4. Decision Tree





- 10.6. Abnormal Movement of the Eyes
 - 10.6.1. Introduction
 - 10.6.2. Etiology
 - 10.6.3. Differential Diagnosis
 - 10.6.4. Decision Tree
- 10.7. Ptosis
 - 10.7.1. Introduction
 - 10.7.2. Etiology
 - 10.7.3. Differential Diagnosis
 - 10.7.4. Decision Tree
- 10.8. Anisocoria
 - 10.8.1. Introduction
 - 10.8.2. Etiology
 - 10.8.3. Differential Diagnosis
 - 10.8.4. Decision Tree
- 10.9. Alteration of Facial Mobility
 - 10.9.1. Introduction
 - 10.9.2. Etiology
 - 10.9.3. Differential Diagnosis
 - 10.9.4. Decision Tree
- 10.10. Pain
 - 10.10.1. Introduction
 - 10.10.2. Etiology
 - 10.10.3. Differential Diagnosis
 - 10.10.4. Decision Tree



Welcome to the best academic program in Neuro-Ophthalmology. You're just one step away from taking your career to the next level"

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.



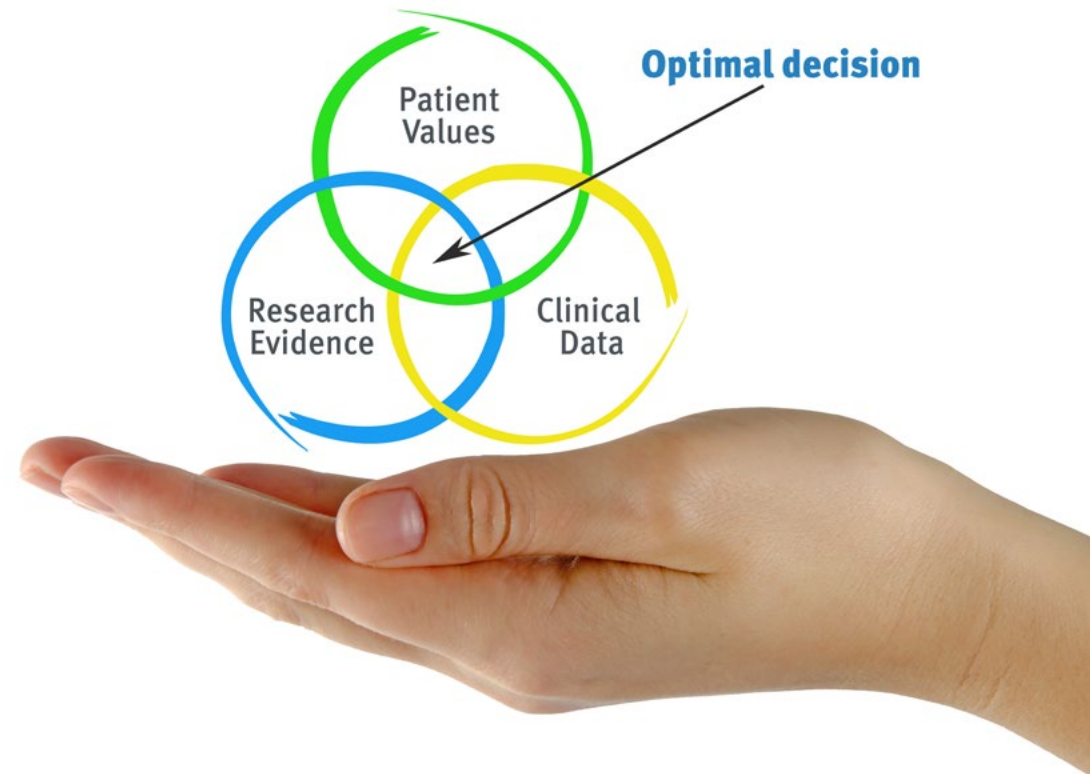
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Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

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. 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. Gervas, 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.

“

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.

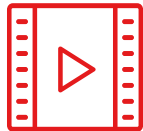
Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.

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

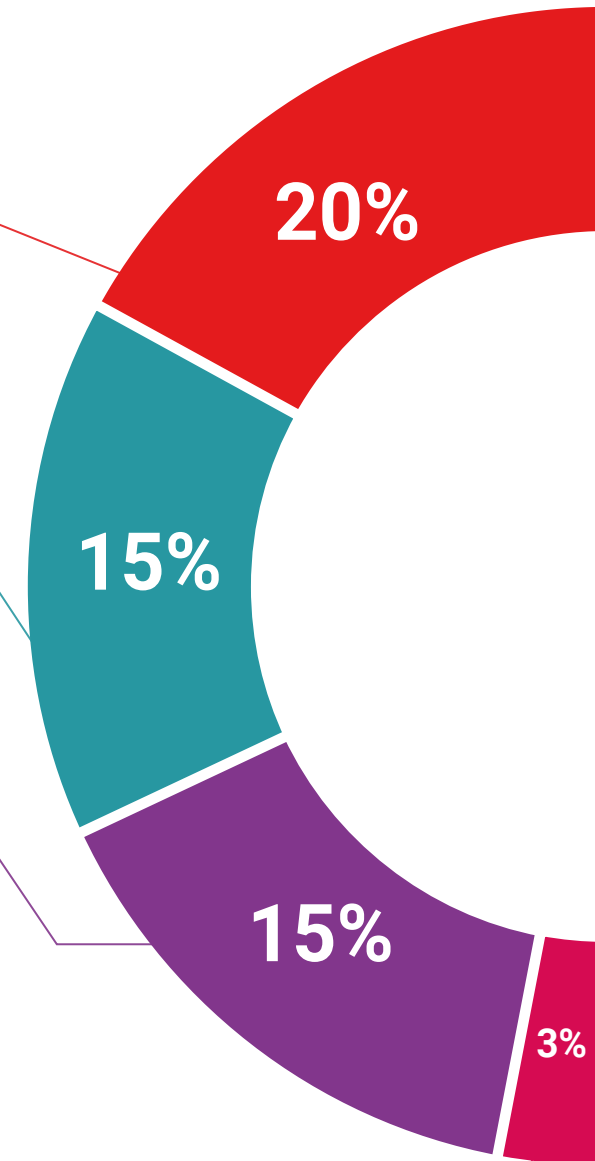
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

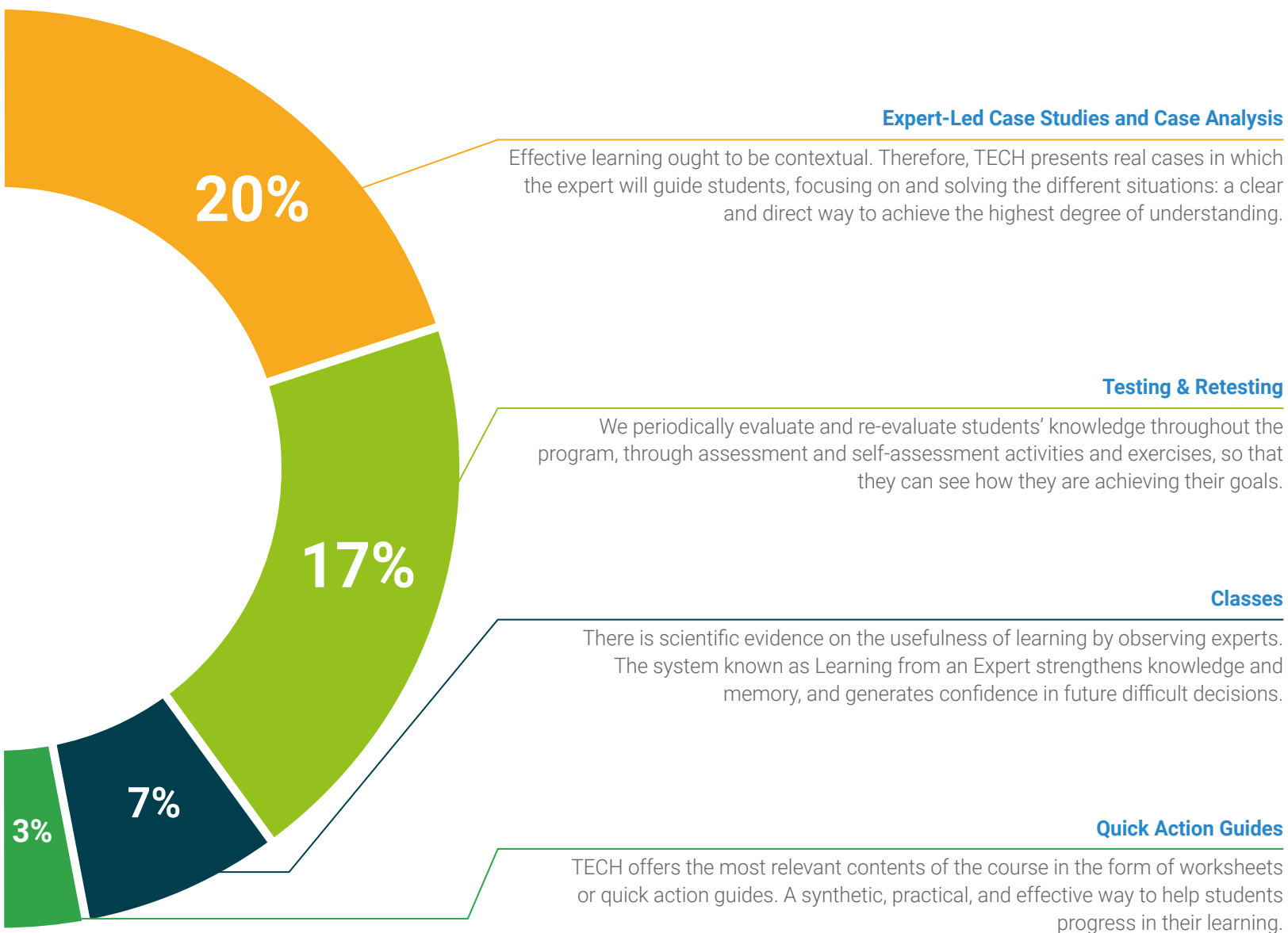
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



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.





07 Certificate

The Master's Degree in Neuro-Ophthalmology guarantees students, in addition to the most rigorous and up-to-date education, access to a Master's Degree issued by TECH Global University.



“

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

This program will allow you to obtain your **Master's Degree in Neuro-Ophthalmology** 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.

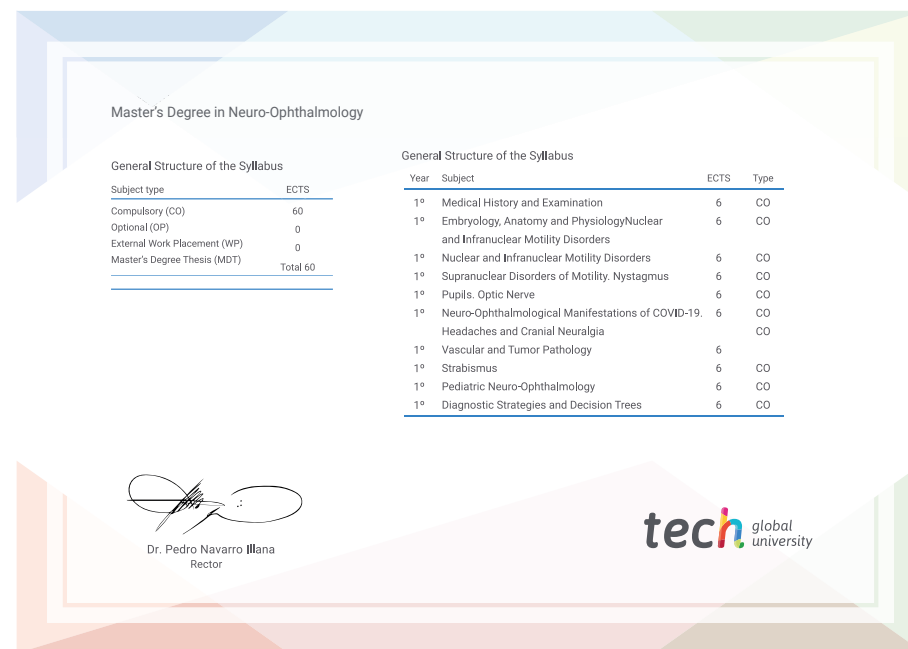
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Master's Degree in Neuro-Ophthalmology**

Modality: **online**

Duration: **12 months**

Accreditation: **60 ECTS**



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



Master's Degree Neuro-Ophthalmology

- » Modality: online
- » Duration: 12 months
- » Certificate: TECH Global University
- » Credits: 60 ECTS
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Master's Degree

Neuro-Ophthalmology

