Postgraduate Diploma

Encephalography and Neurophysiologic Study of Sleep

tech technological university

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Encephalography and Neurophysiologic Study of Sleep

Course Modality: **Online**

Duration: **6 months**

Certificate: **TECH Technological University**

18 ECTS Credits

Teaching Hours: **450 hours.**

Website: **www.techtitute.com/us/medicine/postgraduate-diploma/postgraduate-diploma-encephalography-neurophysiologic-study-sleep**

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01

Introduction

Electroencephalography is one of the most current methods of exploration of the nervous system today, so every physician should know it in detail. Thanks to this tool, pathologies such as epilepsies, encephalopathies and alterations in the state of consciousness can be accurately diagnosed, and it is also particularly useful for detecting sleep disorders. As a tool that encompasses so many fields, physicians who aspire to greater prestige must be able to master it. For this purpose, TECH has prepared this complete degree with all the most relevant theoretical aspects of electroencephalography, carried out by experts with years of experience in this field.

Be the most reputable doctor thanks to the advanced knowledge in electroencephalography that you will acquire in this program"

Being a reliable, safe and painless method, electroencephalograms have become widespread in the clinical setting for the diagnosis of all types of brain-related pathologies. The main one is epilepsy, although it is also used to detect brain tumors or various sleep disorders.

Electroencephalography has undergone constant evolution, because despite being a method of some antiquity, it has not ceased to be used and improved, which obliges medical professionals to continuously update their knowledge in this field. For this reason, TECH brings together in this Postgraduate Diploma the most current and up-to-date knowledge of electroencephalography, so that the medical professional has access to the best possible teaching material on the subject.

Thanks to this degree, the student will be able to accurately record and analyze brain electrogenesis, as well as to know the most accurate Neurophysiologic techniques when detecting and treating epilepsy and different sleep disorders. All this in 3 teaching modules with a wide range of

Due to the 100% online modality, students are able to combine this program with their other professional or personal responsibilities. Since TECH does not require attendance to classes, it is the student himself who decides when, how and where to take on the entire course load of the program.

This **Postgraduate Diploma in Encephalography and Neurophysiologic Study of Sleep** contains the most complete and up to date scientific program on the market. The most important features include:

- The development of case studies presented by medical experts in electroencephalography
- The graphic, schematic and eminently practical contents with which it is conceived provide scientific and practical information on those 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

Expand your brain diagnostic methodology and become a reference in the medical landscape thanks to your knowledge in electroencephalography"

Enroll now in this Postgraduate Diploma and don't wait any longer for that future you envision as a prestigious doctor"

TECH supports you on your way to the greatest medical fame with the most reputable professionals in the industry.

The Postgraduate Diploma in Encephalography and Neurophysiologic Study of Sleep will be the key that will open the door to the management positions you aspire to.

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.

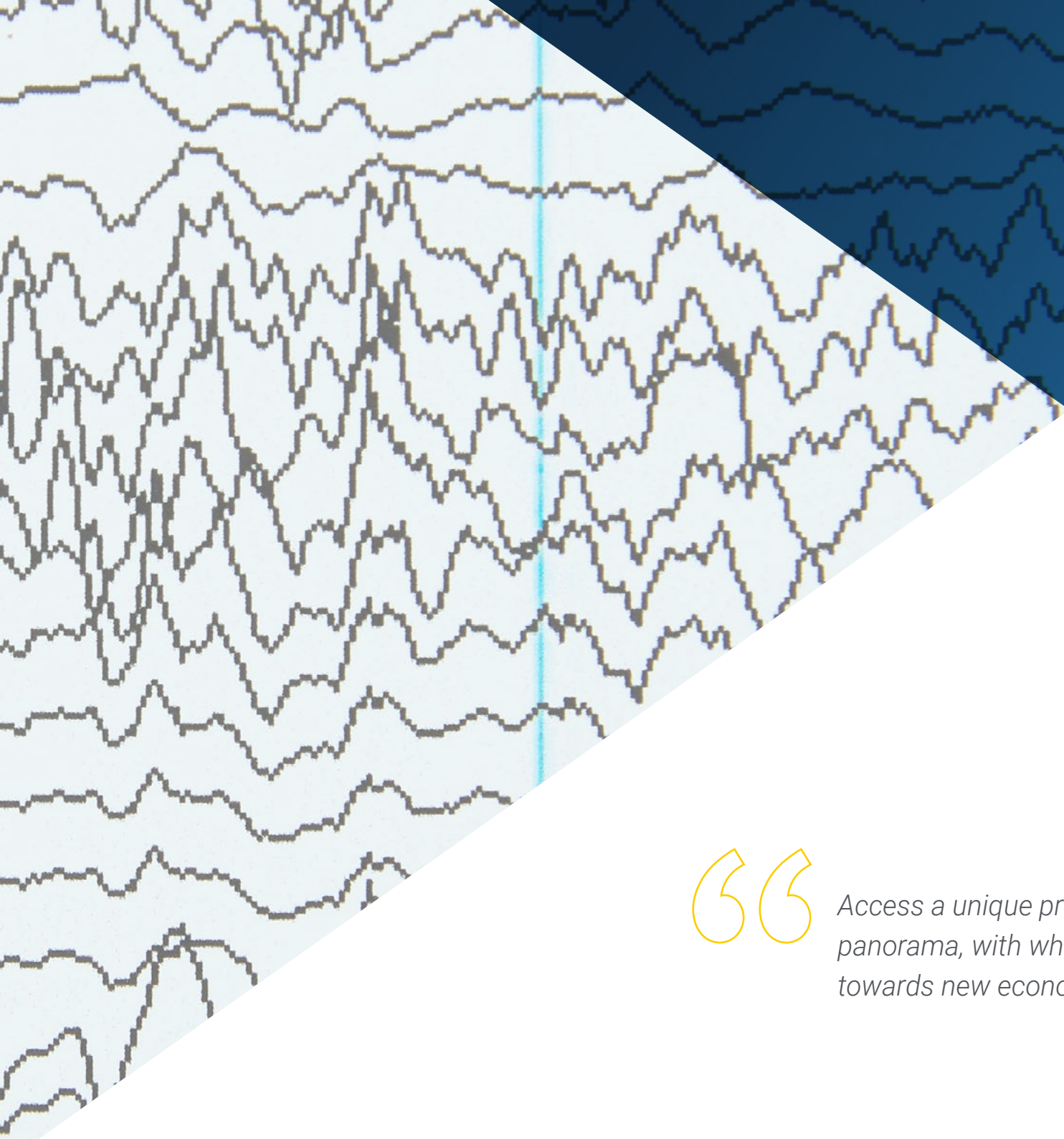
The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive training programmed to train in real situations.

The design of this Program focuses on Problem-Based Learning, by means of which the professional will have to try to solve the different situations of Professional Practice, which will be posed throughout the Program. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

02

Objectives

The objective of this program is shared by all its students, since the aim is to obtain a significant professional improvement that will lead to job promotions in the medical field. To this end, and in order to also increase their own economic expectations, this program not only focuses on the medical field of electroencephalography, but also promotes transversal skills such as communication and organization, which are essential in any occupational development.



Access a unique program in the medical educational panorama, with which you will grow professionally towards new economic and personal heights"

General Objectives

- Obtain a global and updated vision of Neurophysiologic diagnosis in its different training areas, allowing the student to acquire useful and updated knowledge, homogenize criteria following national and international standards
- Generate in students the desire to broaden their knowledge and apply what they have learned to daily practice, to the development of new diagnostic indications and to research

This Postgraduate Diploma will be a before and after in your Neurophysiologic treatments, providing a more global understanding of electroencephalography".

Specific Objectives

Module 1. Brain Electrogenesis. Recording and Analysis Techniques. Development of the electroencephalogram

- Acquire the necessary knowledge of the biophysical, analytical and technical fundamentals as a pillar for learning the genesis of the graphoelements that we will find in an EEG recording
- Deepen in the development and chronobiology of the electroencephalogram
- Identify physiological and pathological EEG patterns and their correlation with age, level of wakefulness/sleep, consciousness, pharmacological interference and clinical significance
- Localization of anomalies, spatio-temporal value, limitations and advantages of the technique
- Identification of normal artifacts and patterns that may mimic pathological graphoelements
- Learning the methodology and application of the quantified EEG

Module 2. Electroencephalogram (EEG) in Electroclinical Syndromes and in the Neurocritical Patient. Precision Neurophysiologic techniques in the diagnosis and treatment of epilepsy

- Diagnostic training of electroclinical syndromes of all stages of life (specific patterns)
- Consolidate knowledge of electroencephalography applied to epilepsies, from the diagnostic phase to pharmacological, neuromodulatory and/or surgical therapeutic management
- Update national and international guidelines and protocols for electroencephalogram in ICU and status epilepticus. Pattern identification and decision making
- Deepen understanding of the methodology and application of high-density EEG and generator localization

Module 3. Neurobiology and Physiology of Sleep. Methodological Aspects

- Deepen the understanding of the structure of normal sleep at all stages of life and its increasing number of known functions
- Update on physiological changes during sleep, the neurobiological basis of sleep cycles and the influence of drugs and substances on sleep
- Accurate update of the chronobiological mechanisms of sleep-wake cycle regulation and methods for monitoring circadian rhythm disturbances of the sleep-wake cycle, including the most novel and emerging ones
- Acquire fundamental technical and methodological knowledge of suitable recording sensors, quantification and interpretation, and practical and novel aspects of polysomnography
- Updated understanding of other polygraph tests during sleep and wakefulness with respect to their implementation, management and practical indications

03

Course Management

The teaching team is the most important pillar in the development of any teaching material. For this reason, TECH puts all the effort and resources available to bring together the best professionals in the medical field. With specific specialties in the field of neurophysiology and brain electrogenesis, teachers will provide students with personalized attention focused on their growth, backed by the extensive professional experience that precedes them.

By joining TECH you will be accessing a new educational paradigm, where you are the center of attention for all teachers and technical staff"

Management

Dr. Martínez Pérez, Francisco

- Clinical Neurophysiology Service. Puerto de Hierro University Hospital, Majadahonda
- Advanced Neurophysiologic studies at Clínica MIP Health-Integrated Personalized Integrated Medicine
- Neurophysiology Techniques applied at the Vitruvian Institute of Biomechanics and Surgery
- Medical Specialist in Clinical Neurophysiology
- Degree in Medicine and Surgery from the Complutense University of Madrid
- Master's Degree in Sleep: Physiology and Pathology, Pablo Olavide University
- Master's Degree in Neurological Electrodiagnosis from the University of Barcelona
- Researcher, University lecturer, professor of the Master's Degree in Sleep Medicine
- Author of several guidelines and consensuses for different medical societies (SENFC, SES, AEP) and the National Commission of the Specialty
- XXI Century National Prize in Medicine
- European Award in Medicine

Professors

Dr. Larrosa Gonzalo, Oscar

- Specialist in Clinical Neurophysiology at Hospital San Rafael
- Expert in Sleep Medicine (CEAMS accredited, first national exam, 2013)
- Coordinator and founder of the Sleep Medicine Unit of MIPsalud, Madrid
- Specialist and clinical consultant in sleep medicine at the Center of Neurological Diseases in Madrid and at the Multidisciplinary Unit for Sleep Disorders in San Rafael Hospital in Madrid, Spain
- Member of the Spanish Sleep Society (SES), founding member and former coordinator of its working group on Conduct and Behavioral Disorders during sleep
- Member of the Spanish Society of the Neurophysiology Clinic (SENFC), founding member and former coordinator of its working group on sleep disorders
- Honorary Member, Medical Advisor and recommended specialist of the Spanish Restless Legs Syndrome Association (AESPI)
- Director of the Online Course "Restless Legs Syndrome (Willis-Ekbom Disease)", (AESPI/ Information without borders) aimed at health professionals

Dr. Balugo Bengoechea, Paloma

- Head of the Electroencephalography and Evoked Potentials areas of the Clinical Neurophysiology Service of Hospital Clinico San Carlos, Madrid
- Coordinator of the Patient Safety Process of the HCSC Neurosciences Institute
- Medical Specialist in Clinical Neurophysiology at the Hospital Clinico San Carlos of Madrid
- Master's Degree in Epilepsy
- Master's Degree in Sleep: Physiology and Medicine
- Diploma of Advanced Studies in Neuroscience
- Member of the neurological diseases research group of the Neuroscience Area of the Health Research Institute of the Hospital Clínico San Carlos (IdISSC)

The leading professionals in the field have come together to offer you the most comprehensive knowledge in this field, so that you can develop with total guarantees of success"

04

Structure and Content

Being aware of the high professional load that medical professionals usually have, TECH helps them by elaborating the contents and structures of this Postgraduate Diploma in a concise and direct way, facilitating the study work as much as possible. Thanks to an accurate audiovisual support and the elimination of the final work required by other degrees, in TECH the student is guaranteed to get the most out of the whole subject without having to make a colossal investment of hours.

Can you imagine what your future could be like if you become an expert in electroencephalography? Stop imagining it and make it happen at TECH"

Module 1. Brain Electrogenesis. Recording and Analysis Techniques. Development of the electroencephalogram

1.1. Biophysical Fundamentals of EEG Recording
- 1.1.1. Context
- 1.1.2. Brief Mathematical Reminder
  - 1.1.2.1. Vector Analysis
  - 1.1.2.2. Determinants and Matrices
- 1.1.3. Brief Introduction to Electromagnetism
  - 1.1.3.1. Field and Potential Concepts
  - 1.1.3.2. Maxwell's Equations
- 1.1.4. Brain Electrical Fields

1.2. Technical and Analytical Fundamentals of EEG
- 1.2.1. Context
- 1.2.2. Analog-to-digital Conversion (ADC)
- 1.2.3. Filters
- 1.2.4. Digital Signal Analysis
  - 1.2.4.1. Spectral Analysis
  - 1.2.4.2. Analysis of Wavelets
- 1.2.5. Determination of the Interaction between Two Signals

1.3. Protocols and Standards for EEG and Video-EEG, Activation Maneuvers. Artifact Detection
- 1.3.1. EEG and Video-EEG
  - 1.3.1.1. Registration Conditions
  - 1.3.1.2. Electrodes
  - 1.3.1.3. By-passes and Assemblies
  - 1.3.1.4. Records
- 1.3.2. Vídeo-EEG
  - 1.3.2.1. Technical Aspects
  - 1.3.2.2. Indications
- 1.3.3. Routine Stimulation Maneuvers
  - 1.3.3.1. Ocular Opening and Closing
  - 1.3.3.2. Pulmonary Hyperventilation
  - 1.3.3.3. Intermittent Light Stimulation
- 1.3.4. Other Non-standard Methods of Activation
  - 1.3.4.1. Other Visual Activation Procedures
  - 1.3.4.2. Activation through Sleep
  - 1.3.4.3. Other Activation Methods
- 1.3.5. Introduction and Importance of Artifacts
  - 1.3.5.1. General Principles of Detection
  - 1.3.5.2. Most Common Artifacts
  - 1.3.5.3. Artifact Removal
- 1.3.6. Key Concepts

1.4. Normal Adult EEG
- 1.4.1. Normal EEG in Wakefulness
  - 1.4.1.1. Alpha Rhythm
  - 1.4.1.2. Beta Rhythm
  - 1.4.1.3. Mu Rhythm
  - 1.4.1.4. Lambda Waves
  - 1.4.1.5. Low-voltage Tracing
  - 1.4.1.6. Theta Activity
- 1.4.2. Normal EEG in Sleep
  - 1.4.2.1. NREM Sleep
  - 1.4.2.2. REM Sleep
- 1.4.3. Variants of Normality/Patterns of Uncertain Significance

1.5. Child EEG, Development and Maturation (I)
- 1.5.1. Technical Considerations
- 1.5.2. Age-dependent EEG Characteristics
  - 1.5.2.1. Continuity
  - 1.5.2.2. Bilateral Hemispheric Synchrony
  - 1.5.2.3. Voltage
  - 1.5.2.4. Variability
  - 1.5.2.5. Reactivity
  - 1.5.2.6. Age-dependent Waves
    - 1.5.2.6.1. Beta-Delta Complex
    - 1.5.2.6.2. Temporary Theta and Alpha Wave Bursts
    - 1.5.2.6.3. Acute Frontal Waves

1.5.3. EEG in Wakefulness and Sleep
1.5.3.1. Wakefulness
1.5.3.2. NREM Sleep
1.5.3.3. REM Sleep
1.5.3.4. Indeterminate and Transitional Sleep
1.5.3.5. Reactivity to Stimuli
1.5.4. Special Patterns / Variants of Normality
1.5.4.1. Bifrontal Delta Activity
1.5.4.2. Temporary Sharp Waves
1.5.5. Key Concepts
1.6. Child EEG, Development and Maturation (II). Physiological EEG from Infant to Adolescent
1.6.1. Technical Considerations
1.6.2. EEG in Infants from 2 to 12 Months of Age
1.6.3. EEG in Early Childhood 12 to 36 months
1.6.4. EEG in Preschool Age, from 3 to 5 years old
1.6.5. EEG in Older Children, 6 to 12
1.6.6. EEG in Adolescents, 13 to 20 Years old
1.6.7. Key Concepts
1.7. Slow Anomalies, Description and Significance
1.7.1. Focal Slow Anomalies
1.7.1.1. Summary
1.7.1.2. Pattern Description
1.7.1.3. Clinical Significance of Slow Focal Waves
1.7.1.4. Disorders Causing Slow Focal Waves
1.7.2. Asynchronous Generalized Slow Anomalies
1.7.2.1. Summary
1.7.2.2. Pattern Description
1.7.2.3. Clinical Significance of Generalized Asynchronous Waves
1.7.2.4. Disorders Causing Generalized Asynchronous Waves
1.7.3. Synchronous Generalized Slow Waves
1.7.3.1. Summary
1.7.3.2. Pattern Description
1.7.3.3. Clinical Significance of Generalized Asynchronous Waves
1.7.3.4. Disorders Causing Generalized Asynchronous Waves
1.7.4. Conclusions
1.8. Focal and Generalized Intercritical Epileptiform Anomalies
1.8.1. General Considerations
1.8.2. Identification Criteria
1.8.3. Location Criteria
1.8.4. Intercritical Epileptiform Anomalies and Their Interpretation
1.8.4.1. Spikes and Sharp Waves
1.8.4.2. Benign Focal Epileptiform Discharges
1.8.4.3. Wave-Point
1.8.4.3.1. Slow Wave-Point
1.8.4.3.2. Wave-Point at 3 Hz
1.8.4.3.3. Polypoint or Wave Polypoint
1.8.4.4. Hypsarrhythmia
1.8.4.5. Focal Intercritical Anomalies in Generalized Epilepsies
1.8.5. Summary/key points
1.9. Ictal EEG. Types of Seizures and Electroclinical Correlates
1.9.1. Generalized Onset Seizures
1.9.1.1. Motor start
1.9.1.2. Non-motor Start
1.9.2. Focal Onset Seizures
1.9.2.1. State of Consciousness
1.9.2.2. Motor/non-motor Start
1.9.2.3. Focal with Progression to Bilateral Tonic-Clonic
1.9.2.4. Hemispheric Lateralization
1.9.2.5. Lobar Location
1.9.3. Crisis of Unknown Onset
1.9.3.1. Motor/non-motor
1.9.3.2. Unclassified
1.9.4. Key Concepts

1.10. Quantified EEG
- 1.10.1. Historical Utilization of Quantified EEG in Clinical Practice
- 1.10.2. Application of Quantified EEG Methods
  - 1.10.2.1. Types of Quantified EEG
    - 1.10.2.1.1. Power Spectrum
    - 1.10.2.1.2. Synchronization Measures
- 1.10.3. Quantified EEG in Current Clinical Practice
  - 1.10.3.1. Classification of Encephalopathies
  - 1.10.3.2. Seizure Detection
  - 1.10.3.3. Advantages of Continuous EEG Monitoring
- 1.10.4. Key Concepts

Module 2. Electroencephalogram (EEG) in Electroclinical Syndromes and in the Neurocritical Patient. Precision Neurophysiologic techniques in the diagnosis and treatment of epilepsy.

2.1. Electroclinical Syndromes of the Neonate and Infant
- 2.1.1. Neonatal Period
  - 2.1.1.1. Ohtahara Syndrome
  - 2.1.1.2. Early Myoclonic Encephalopathy
  - 2.1.1.3. Self-limited Neonatal Seizures. Self-limited Familial Neonatal Neonatal Epilepsy
  - 2.1.1.4. Neonatal-onset Structural Focal Epilepsy
- 2.1.2. Infant Period
  - 2.1.2.1. West Syndrome
  - 2.1.2.2. Dravet Syndrome
  - 2.1.2.3. Febrile Plus Seizures and Genetic Epilepsy with Febrile Plus Seizures
  - 2.1.2.4. Myoclonic Epilepsy of the Infant
  - 2.1.2.5. Familial and Non-familial Self-limited Infant Epilepsy
  - 2.1.2.6. Epilepsy of the Infant with Migrating Focal Seizures
  - 2.1.2.7. Myoclonic Status in Non-Progressive Encephalopathies
  - 2.1.2.8. Epilepsy in Chromosomal Disorders

2.2. Electroclinical Syndromes in Children
- 2.2.1. Role of EEG and Video-EEG in the Diagnosis and Classification of Epileptic Syndromes with Onset between 3 and 12 Years of Age
  - 2.2.1.1. Background and Current Clinical Practice
  - 2.2.1.2. Methodological Design and Recording Protocols
  - 2.2.1.3. Interpretation, Diagnostic Value of Findings, Report
  - 2.2.1.4. Integration of EEG into Syndrome-Ethiology Taxonomy
- 2.2.2. Genetic Generalized Epilepsies (idiopathic, IGE)
  - 2.2.2.1. Typical EEG Features of EGI and Methodological Principles
  - 2.2.2.2. Epilepsy with Infantile Absence
  - 2.2.2.3. Epilepsy with Juvenile Absence
  - 2.2.2.4. Other EGI Phenotypes (3-12 years)
  - 2.2.2.5. Epilepsies with Reflex Seizures
- 2.2.3. Genetic Focal Epilepsies (Idiopathic, EFI)
  - 2.2.3.1. Typical EEG Features of EFI and Methodological Principles
  - 2.2.3.2. Focal Idiopathic Focal Epilepsy with Centrotemporal Spikes
  - 2.2.3.3. Panayiotopoulos Syndrome
  - 2.2.3.4. Other EFI Phenotypes (3-12 years)
- 2.2.4. Non-idiopathic Focal Epilepsies (FE). Lobar Syndromes
  - 2.2.4.1. Typical EEG Features of EF and Methodological Principles
  - 2.2.4.2. Frontal Lobe Epilepsy
  - 2.2.4.3. Temporal Lobe Epilepsy
  - 2.2.4.4. Epilepsy of the Posterior Cortex
  - 2.2.4.5. Other Locations (insula, cingulum, hemispheric lesions)
- 2.2.5. Epileptic Encephalopathies (EE) and Related Syndromes (3-12 years)
  - 2.2.5.1. Typical EEG Features of EE and Methodological Principles
  - 2.2.5.2. Lennox-Gastaut Syndrome
  - 2.2.5.3. Encephalopathy with Electrical Sleep Electrical Status Sickness (ESES) and Landau-Kleffner Syndrome.
  - 2.2.5.4. Epilepsy with Myoclonus-atonic Seizures (Doose Syndrome)
  - 2.2.5.5. Epilepsy with Myoclonic Absence

2.3. Adolescent and Adult Electroclinical Syndromes
- 2.3.1. Role of EEG in the Diagnosis of Epileptic Syndromes in Adolescents and Adults
- 2.3.2. Genetic Generalized Epilepsy in Adolescents and Adults
  - 2.3.2.1. Juvenile Myoclonic Epilepsy
  - 2.3.2.2. Juvenile Absence Epilepsy
  - 2.3.2.3. Epilepsy with Generalized Tonic-Clonic Seizures
  - 2.3.2.4. Other Phenotypes of EGI in Adolescents and Adults
- 2.3.3. Non-idiopathic Focal Epilepsy in Adolescents and Adults. Lobar Syndromes
  - 2.3.3.1. Frontal Lobe
  - 2.3.3.2. Temporal Lobe
  - 2.3.3.3. Other Locations
- 2.3.4. Other Non-Age-Dependent Epileptic Syndromes
- 2.3.5. Epilepsy in the Elderly

2.4. EEG Nomenclature in ICU
- 2.4.1. Minimum Requirements for Reporting in the Neurocritically Ill Patient
- 2.4.2. Background Tracing
- 2.4.3. Epileptiform Discharges of Sporadic Occurrence
- 2.4.4. Rhythmic and/or Periodic Patterns
- 2.4.5. Electrical and Electro-clinical Crises
- 2.4.6. Short-term Rhythmic Discharges (BIRDs)
- 2.4.7. Patrón ictal-interictal (ictal-interictal continuum)
- 2.4.8. Other Terminology

2.5. EEG in Altered Level of Consciousness, Coma and Brain Death
- 2.5.1. EEG Findings in Encephalopathy
- 2.5.2. EEG Findings in Coma
- 2.5.3. Brain Electrical Inactivity
- 2.5.4. Evoked Potentials in Conjunction with EEG in Patients with Altered Level of Consciousness

2.6. Status Epilepticus (I)
- 2.6.1. Context
  - 2.6.1.1. "Time is Brain"
  - 2.6.1.2. Pathophysiology
- 2.6.2. Definition and Timing
- 2.6.3. Classification. Diagnostic Axes
  - 2.6.3.1. Axis I. Semiology
  - 2.6.3.2. Axis II. Etiology
  - 2.6.3.3. Axis III. EEG correlate
  - 2.6.3.4. Axis IV. Age

2.7. Status Epilepticus (II)
- 2.7.1. Non-convulsive Status Epilepticus: Definition
- 2.7.2. Semiology
  - 2.7.2.1. Nonconvulsive Status in Comatose Patients
  - 2.7.2.2. Nonconvulsive Status in Patients without Coma
    - 2.7.2.2.1. Dyscognitive Status: With Altered Level of Consciousness (or dialeptic) and Aphasic
    - 2.7.2.2.2. Continued Aura
    - 2.7.2.2.3. Autonomous Status
- 2.7.3. EEG Criteria for the Determination of Non-seizure Status (Salzburg Criteria)

2.8. Continuous EEG/Video-EEG Monitoring in ICU
- 2.8.1. Utility and Conditions
- 2.8.2. Recommended Indications and Duration
  - 2.8.2.1. Adult and Pediatric Population
  - 2.8.2.2. Neonates
- 2.8.3. Clinical Tools
- 2.8.4. New Devices

2.9. Epilepsy Surgery
- 2.9.1. Pre-surgical Video-EEG
  - 2.9.1.1. Superficial
  - 2.9.1.2. Invasive
  - 2.9.1.3. Semi-invasivo
- 2.9.2. Intraoperative Monitoring

2.10. The High Density Electroencephalogram. Generator Location and Source Analysis
- 2.10.1. Signal Acquisition
  - 2.10.1.1. General Aspects
  - 2.10.1.2. Type, Location and Number of Electrodes
  - 2.10.1.3. The Importance of the Reference
- 2.10.2. Digitization of Electrode Location
- 2.10.3. Debugging, Artifacts and Signal Cleaning
- 2.10.4. Blind Source Separation
- 2.10.5. Brain Dipoles
- 2.10.6. Brain Maps
  - 2.10.6.1. Adaptive Spatial Filters
- 2.10.7. Skull and Brain Modeling
  - 2.10.7.1. Spherical Models
  - 2.10.7.2. Surface Element Model
- 2.10.8. Finite Element Model
- 2.10.9. Generator Location: Inverse Problem
  - 2.10.9.1. Single Current Dipole Model
- 2.10.10. *Imaging*Methods

Module 3. Neurobiology and Physiology of Sleep. Methodological Aspects

3.1. Normal Sleep
- 3.1.1. Features
- 3.1.2. Evolution with Age
- 3.1.3. Function

3.2. Neurobiology and Physiological Changes during the Sleep-Wake Cycle
3.3. Chronobiology of the sleep-wake cycle
3.4. Polysomnography (I): Technical Aspects and Methodology
3.5. Polysomnography (II): Recording Sensors and their Use
3.6. Polysomnography (III): Quantification of Sleep Structure and Cardiorespiratory Events
3.7. Polysomnography (IV): Quantification of Motor Events
3.8. Advanced Automatic Signal Analysis
3.9. Other Sleep-Wake Polygraphic Techniques
- 3.9.1. Sleep Breathing Polygraphy
- 3.9.2. Multiple Sleep Latency Test
- 3.9.3. Maintenance of Wakefulness Test
- 3.9.4. Suggested Immobilization Test

3.10. Actigraphy, Circadian Monitoring and other Ambulatory Measurements

A professional with your high medical capabilities deserves the best possible course. Welcome to the place where winners choose"

05

Methodology

This training program provides you with a different way of learning. Our methodology uses a cyclical learning approach: ***Re-learning***.

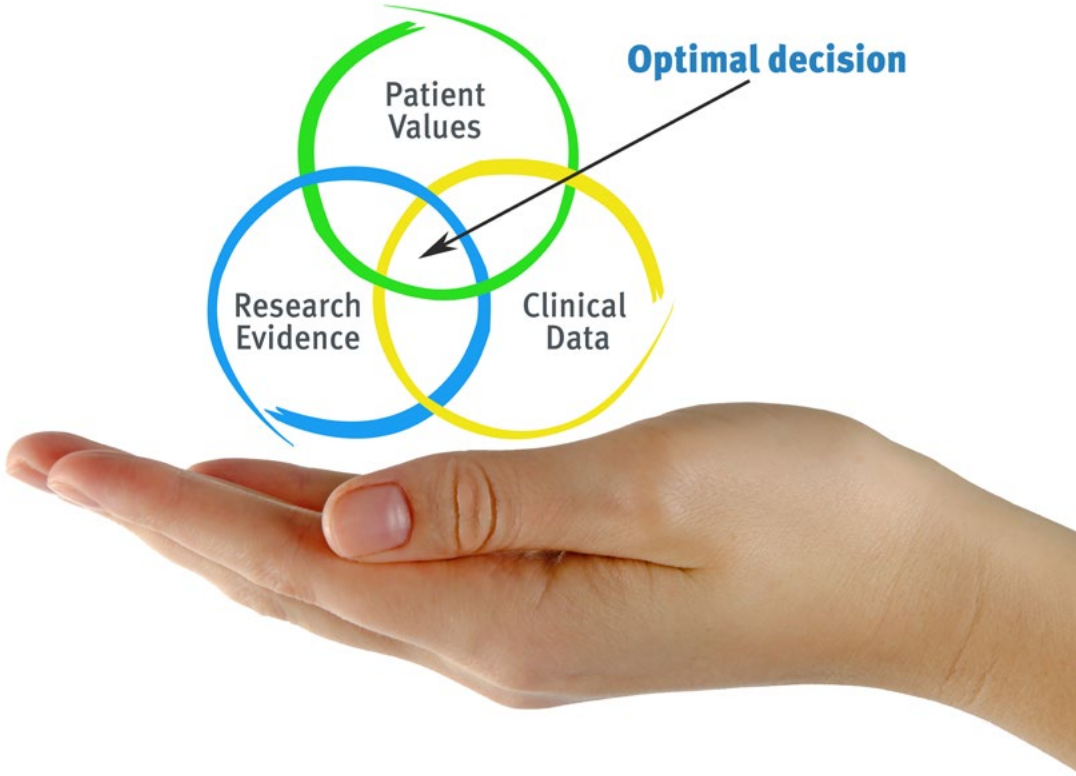
This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the ***New England Journal of Medicine have considered it to be one of the most effective.***

Discover Re-learning, 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 adundance 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.

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:

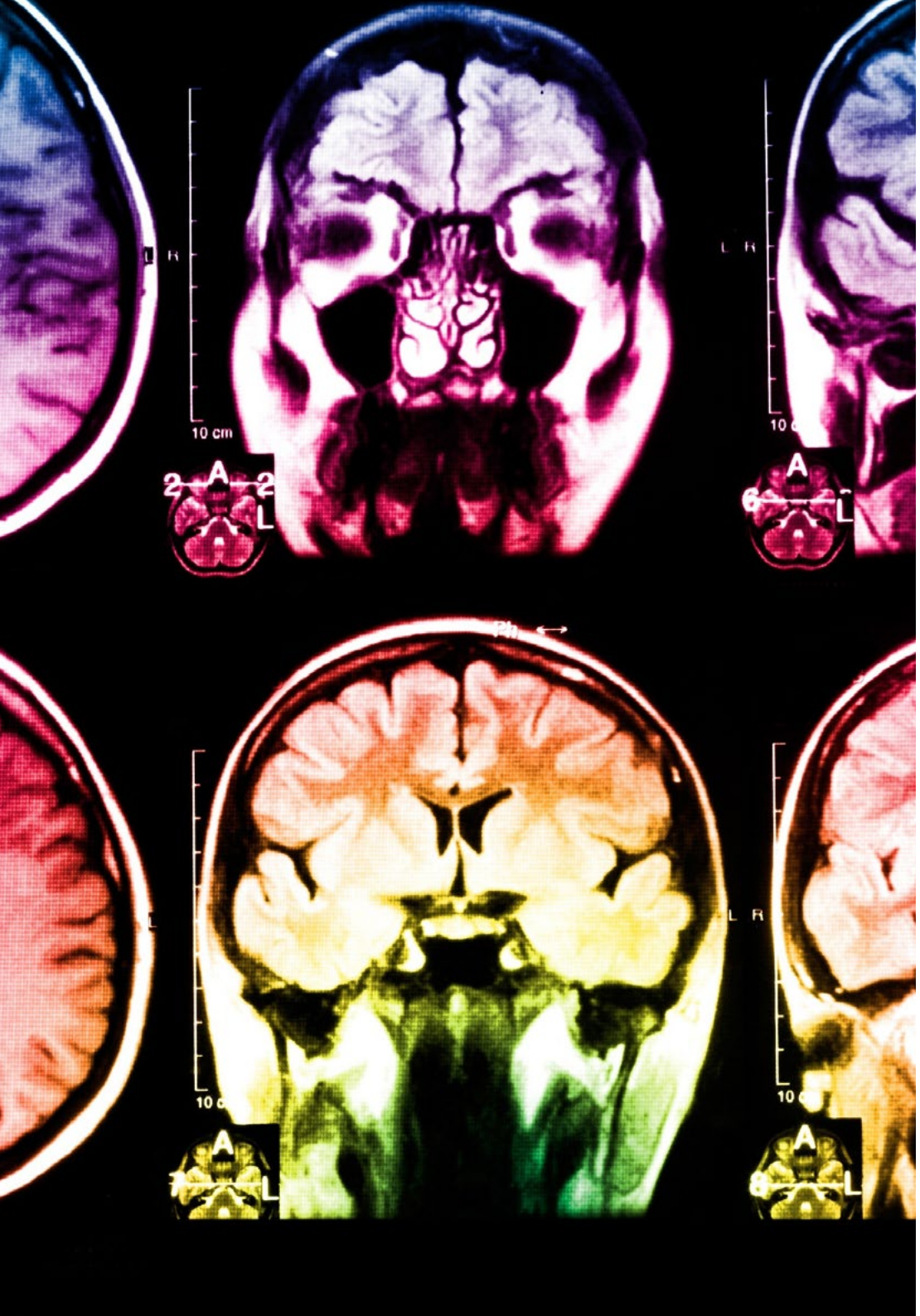
1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that evaluate real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student to better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

Re-learning Methodology

At TECH we enhance the Harvard case method with the best 100% online teaching methodology available: Re-learning.

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 Re-learning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best Spanish-speaking 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 high socioeconomic profile and an average age of 43.5 years old.

Re-learning 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.

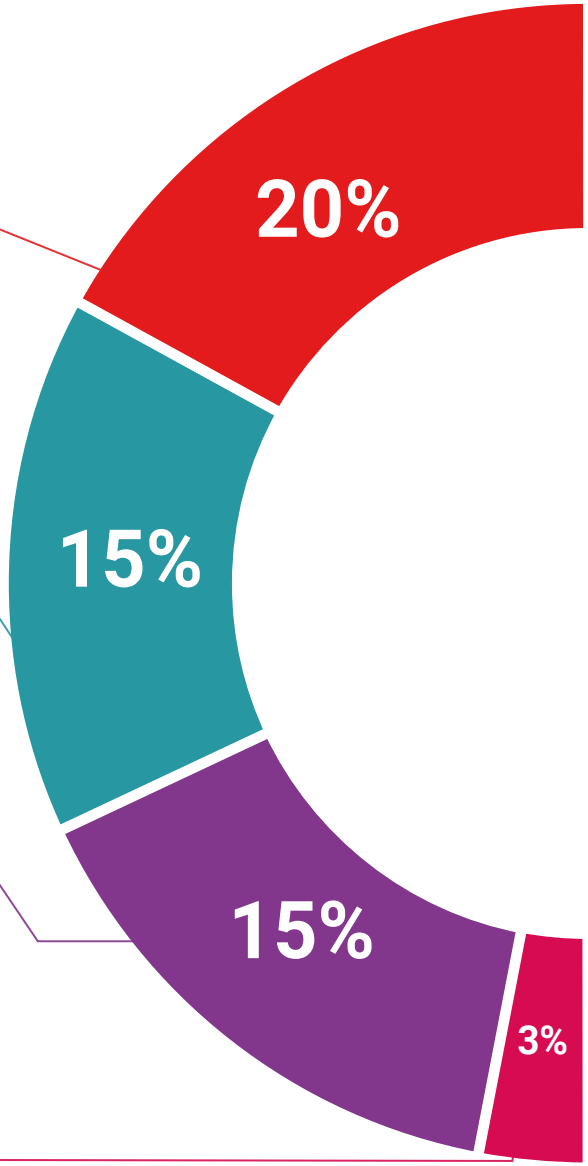
Interactive Summaries

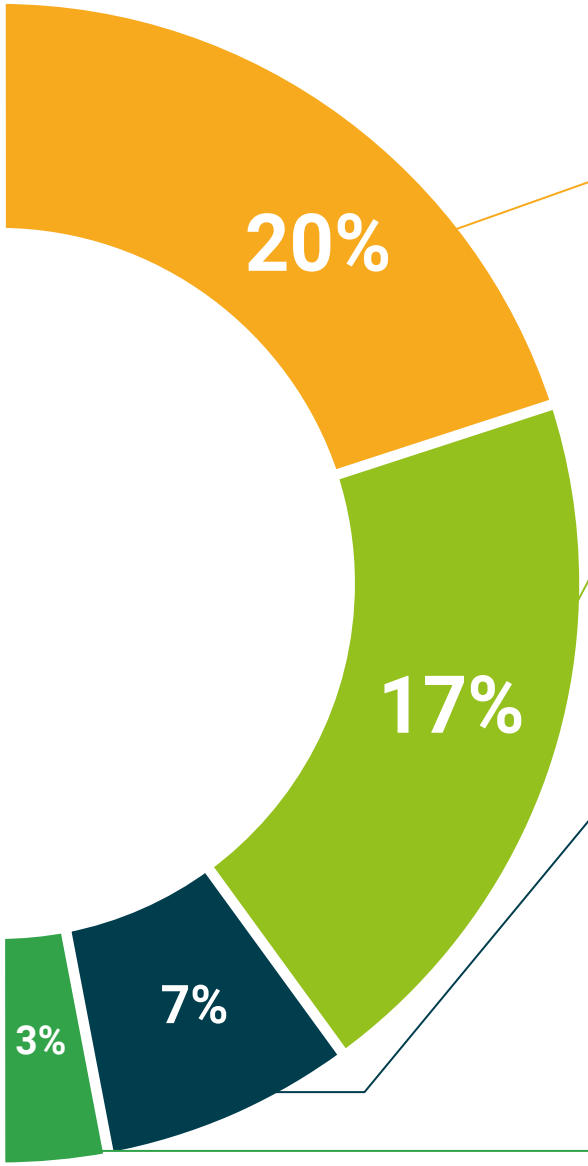
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive multimedia content presentation training Exclusive 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 your goals.

Classes

There is scientific evidence on the usefulness of learning by observing experts: The system termed Learning from an Expert strengthens knowledge and recall capacity, and generates confidence in the face of difficult decisions in the future.

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 Diploma in Encephalography and Neurophysiologic Study of Sleep guarantees, in addition to the most rigorous and up to date training, access to a Postgraduate Diploma issued by TECH Technological University.

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

This **Postgraduate Diploma in Encephalography and Neurophysiologic Study of Sleep** contains the most complete and up to date scientific program on the market.

After passing the evaluation, the student will receive the corresponding **Postgraduate Diploma** issued by **TECH Technological University***

This course contributes in a relevant way to the development of the professional's continuing education and provides a high university curricular value to their training, and is 100% valid in all public examinations, professional career and labor exchanges of any Spanish Autonomous Community.

Title: **Postgraduate Diploma in Encephalography and Neurophysiologic Study of Sleep**

ECTS: **18**

Official N.º of Hours: **450 hours.**


tech technological university

Awards the following

DIPLOMA

to

Mr./Ms. _____, with identification number _____.

For having passed and accredited the following program

POSTGRADUATE DIPLOMA

in

Encephalography and Neurophysiologic Study of Sleep

This is a qualification awarded by this University, with 18 ECTS credits and equivalent to 450 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH is a Private Institution of Higher Education recognized by the Ministry of Public Education as of June 28, 2018.

June 17, 2020

Tere Guevara Navarro
Dean

This qualification must always be accompanied by the university degree issued by the competent authority to practice professionally in each country. Unique TECH Code: AFWORD23S techtitute.com/certificates

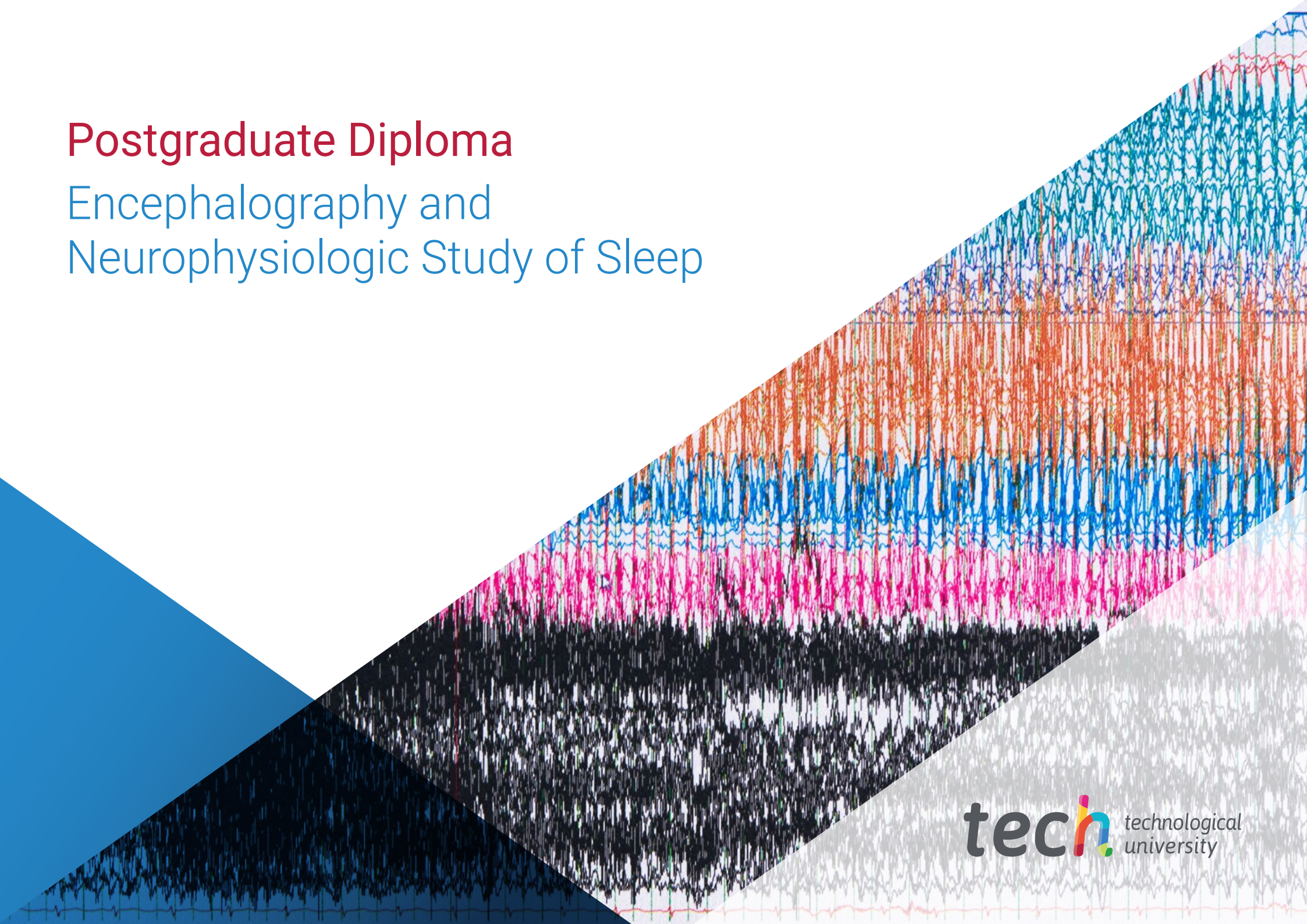
*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

Postgraduate Diploma
Encephalography and Neurophysiologic Study of Sleep

Course Modality: **Online**
Duration: **6 months.**
Certificate: **TECH Technological University**
18 ECTS Credits
Teaching Hours: **450 hours.**

Postgraduate Diploma

Encephalography and Neurophysiologic Study of Sleep



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