



## Postgraduate Diploma

## Biomechanics and Voice Assessment

» Modality: online

» Duration: 6 months

» Certificate: TECH Technological University

» Dedication: 16h/week

» Schedule: at your own pace

» Exams: online

Website: www.techtitute.com/in/education/postgraduate-diploma/biomechanics-voice-assessment

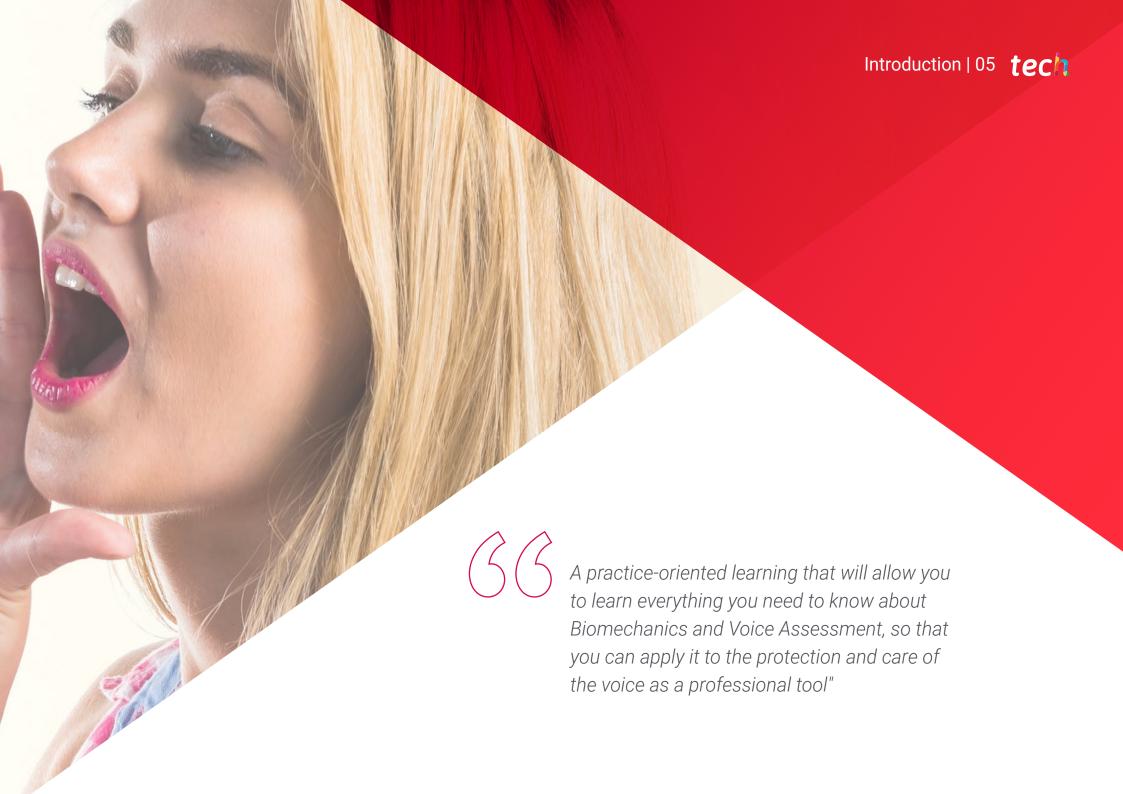
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# 01 Introduction

Knowledge of the phonatory system is, for teaching professionals, a basic requirement to maintain the functionality of the voice as a working instrument. This program will enable them to acquire the most comprehensive anatomical and functional knowledgeand analyze the different contexts in which the voice requires prior attention, support or curative or palliative intervention.



## tech 06 | Introduction

The knowledge and management of the speech apparatus is indispensable for the work of teaching professionals who want to ensure that their voice is in good condition when carrying out their work. In this sense, it is also important to be aware of the multifactorial nature of the voice and its alterations. The changes that occur in the human voice over time are related, among other factors, to the maturation and development of the phonorespiratory system, as well as to its deterioration.

Another type of change is due to sex-related differences. There are also changes in the voice that are due to professional use and to structural and functional alterations associated or not with other pathologies. And all of this is evident in both the normal voice and the pathological voice.

For all these reasons, knowledge about the use of one's own voice, programs for the prevention of disorders and Voice Therapy applied to the use in different contexts, are crucial elements for the health, well-being and development of any speaker.

This type of training makes professionals in this field increase their ability to succeed, which results in better practice and performance that will have a direct impact on their professional work, both in the teaching field and in the field of professional communication.

This program offers a very broad view of vocal pathology and physiology, with examples of successful cases. It includes all the basic and essential techniques for the preparation and re-education of the voice, taking into account the professions that use it as their main working tool, providing tools, experiences and advances in this field, which have also been guaranteed by the teaching staff on the Postgraduate Diploma, since all of them work in the field. The professional will learn based on professional experience, as well as evidence-based pedagogy, which makes the student's preparation more effective and accurate.

This **Postgraduate Diploma in Biomechanics and Voice Assessment** offers you the advantages of a high-level educational, teaching, and technological program. These are some of its most notable features:

- The latest technology in online teaching software
- A highly visual teaching system, supported by graphic and schematic contents that are easy to assimilate and understand
- Practical cases presented by practising experts
- State-of-the-art interactive video systems
- Teaching supported by telepractice
- Continuous updating and recycling systems
- · Autonomous learning: full compatibility with other occupations
- Practical exercises for self-evaluation and learning verification
- Support groups and educational synergies: questions to the expert, debate and knowledge forums
- Communication with the teacher and individual reflection work
- Content that is accessible from any fixed or portable device with an Internet connection
- Supplementary documentation databases are permanently available, even after the program



With this Postgraduate Diploma, you will be able to balance a high intensity program with your professional and personal life, achieving your goals in a simple and real way"



A specific program to provide professionals with the necessary capacity to attend to their vocal needs, preventing and alleviating the problems derived from the intensive use of the voice"

The individuals that collaborated in the creation of this Postgraduate Diploma are professionals in the sector who will provide students with the greatest compendium of knowledge in both scientific and purely technical disciplines.

In this way TECH ensures to offer you the updating objective it intends. A multidisciplinary team of trained and experienced professionals in different environments, who will develop the theoretical knowledge in an efficient way, but, above all, will put at the service of the program the practical knowledge derived from their own experience: one of the differential qualities of this specialization program.

This mastery of the subject is complemented by the effectiveness of the methodological design of this Postgraduate Diploma in Biomechanics and Voice Assessment. Developed by a multidisciplinary team of experts, it integrates the latest advances in educational technology. In this way, the students will be able to study with a range of comfortable and versatile multimedia tools that will give them the operability they need in their learning process.

The design of this program is based on Problem-Based Learning: an approach that views learning as a highly practical process. To achieve this remotely, we will use telepractice: with the help of an innovative interactive video system and *Learning from an Expert*, the student will be able to acquire the knowledge as if they were facing the scenario they are learning at that moment.

A program created and directed by active professionals who are experts in this field of work, which makes this Postgraduate Diploma a unique opportunity for professional growth.

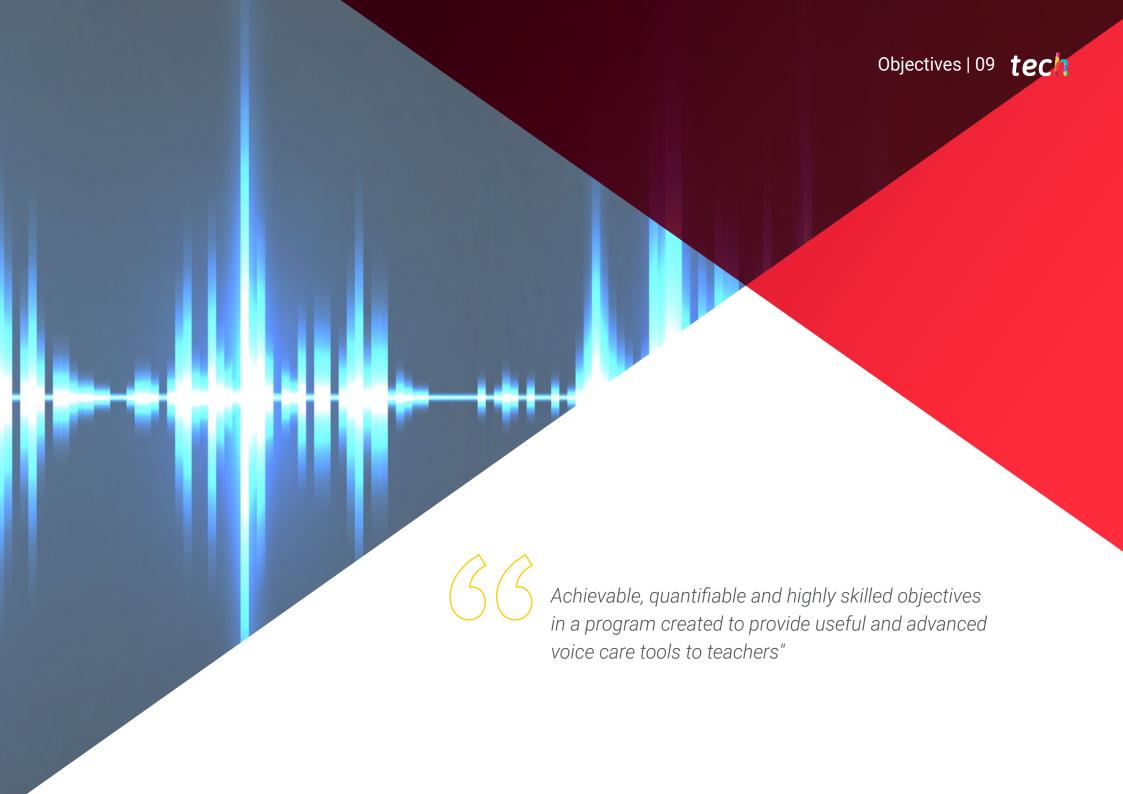
Our innovative telepractice concept will give you the opportunity to learn through an immersive experience, with a high educational impact.





The Postgraduate Diploma offers detailed information on the most relevant advances in the specialty from an eminently practical point of view, in a time where accredited knowledge is essential.

The objective of this program is to offer professionals who work in Voice Therapy, the necessary knowledge and skills to perform their duties using the most advanced protocols and techniques of the moment.



## tech 10 | Objectives



### **General Objectives**

- Learn the specific anatomical and functional aspects of the phonatory system as a basis for the rehabilitation of vocal pathologies and for vocal work with voice professionals
- Gain in-depth knowledge of the most current diagnostic and treatment techniques
- Delve into the knowledge and analysis of the results obtained in objective voice assessments
- Learn how to implement a correct and complete assessment of vocal function in daily clinical practice
- Know the most important features of the voice and learn to listen to different types of voices in order to know which aspects are altered to guide clinical practice
- Analyze the different possible vocal pathologies and achieve scientific rigor in treatments
- Learn about different approaches to the treatment of vocal pathologies
- Raise awareness of the need for vocal care
- Teach voice therapy work focused on different voice professionals
- Learn the importance of multidisciplinary work in some voice pathologies
- View the voice as a global ability of the person and not as an exclusive act of the phonatory system
- Solve real case studies with current therapeutic approaches based on scientific evidence



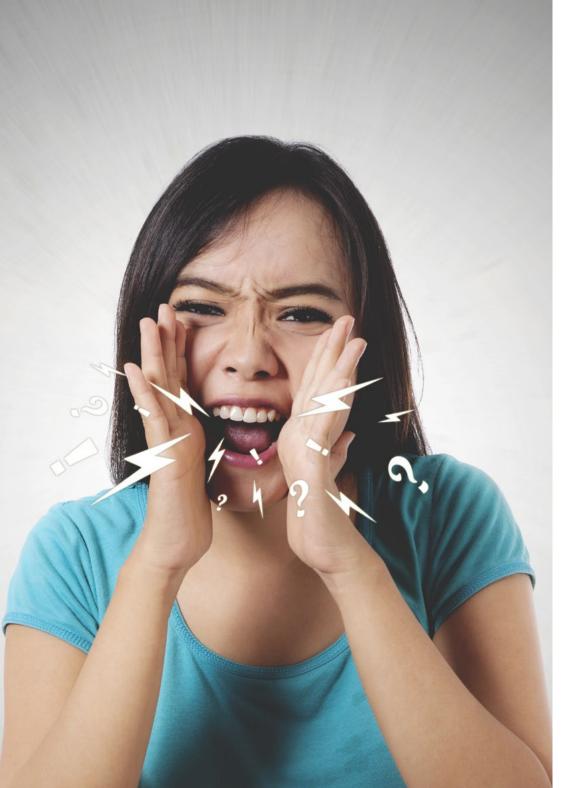
### **Specific Objectives**

#### Module 1. Anatomical, Physiological and Biomechanical Fundamentals of the Voice

- Learn about the phylogenetic origin of the phonatory system
- Learn about the evolutionary development of the human larynx
- Learn the main muscles and the functioning of the respiratory system
- Learn about the main anatomical structures that make up the larynx and how they function
- Learn the histology of the vocal cords
- Analyze the vibratory cycle of the vocal cords
- Analyze the different structures and cavities that form the vocal tract
- Study the different theories that have given answers to how voice is produced
- Study the characteristics of phonatory physiology and its main components
- Gain in-depth knowledge of the different exploratory tests used in the morphofunctional exploration of the larynx
- Learn the instruments needed to perform a morphofunctional assessment of the phonatory system

#### Module 2. Objective Exploration of the Voice

- Analyze and understand the results obtained with objective screening tests
- Learn in which cases the performance of such objective tests is indicated or not
- Learn concepts of speech acoustics
- Learn the different observable parameters in a spectrogram
- Learn how to analyze a spectrogram
- Know how to collect voice samples for acoustic analysis
- Interpret results obtained in the acoustic analysis of the voice
- Optimally use different acoustic analysis programs



#### Module 3. Functional Evaluation of the Voice

- Learn to listen to different types of voices with objective criteria
- Apply different audio-perceptual scales in daily practice
- Learn about the different existing vocal function assessment tests
- Know the concept of fundamental frequency and learn how to obtain it from a speech sample
- Know the phonetogram and learn to use it in daily practice
- Calculate vocal functionality indexes
- Perform a complete anamnesis based on patients characteristics
- Learn about additional tests that can guide us in our treatment



A boost to your professional profile that will give you the competitiveness of the best prepared professionals in the labor market"

# 03 Course Management

Within the concept of total quality of the program, TECH is proud to offer students a teaching staff of the highest level, chosen for their proven experience. Professionals from different areas and fields of expertise that make up a complete, multidisciplinary team. A unique opportunity to learn from the best.



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An impressive teaching staff, consists up of professionals from different areas of expertise, will be your teachers during your training: a unique opportunity not to be missed"

## tech 14 | Course Management

#### **Guest Director**



#### D. Gavilán, Javier

- Head of Service and Professor of Otorhinolaryngology at the La Paz university hospital, Madrid
- 350 articles in international scientific journals
- Recipient of the Honor Award from the American Academy of Otolaryngology-HNS
- Member of more than 25 Scientific Societies

#### **Co-Direction**



#### Ms. Martín Bielsa, Laura

- Speech therapist and teacher
- Expert in voice pathology
- · Director of Multidisciplinary Center Dime Más
- CFP Estill Voice Training
- Extensively trained in different methods of vocal rehabilitation
- Dean of the Professional Association of Speech-Language Pathologists of Aragor



#### **Professors**

#### Ms. Ogén Morado, Carolina

- ENT Service at the La Paz university hospital of Madrid
- Postgraduate course in rehabilitation and improvement of the professional speaking and singing voice Institute of Human Sciences-University of Alcalá de Henares Madrid
- Postgraduate course in voice pathology Institute of Human Sciences-University of Alcalá de Henares Madrid
- Graduate in Teaching, specializing in Hearing and Language, University of La Coruña
- Postgraduate course in Hearing and Language Disorders at the University of La Coruña
- Diploma in Speech Therapy from the University of La Coruña

#### Dr. García-López, Isabel

- PhD in Medicine and Surgery from the Autonomous University of Madrid
- Medical Specialist in Otorhinolaryngology with specific training and dedication to Voice Pathology
- General Vice-Secretary of the Spanish Society of Otorhinolaryngology and Head and Neck Surgery
- Lecturer in the postgraduate course on Voice Disorders at the Ramon Llul University of Barcelona
- Professor of the Master's Degree in Vocal Disorders at the Catholic University of Murcia
- Member of the main scientific societies in the world related to voice: Voice Foundation. Collegium Medicorum Theatri, European Society of Laryngology, International Association of Phonosurgery and Spanish Society of Otorhinolaryngology and Head and Neck Surgery
- Otorhinolaryngology Department, La Paz hospital, Madrid
- General Vice-Secretary of the Spanish Society of Otorhinolaryngology and Head and Neck Surgery



## tech 16 | Course Management

#### Dr. Bernáldez Millán, Ricardo

- ENT Assistant in the specialty of Otorhinolaryngology at La Paz university hospital, La Paz
- PhD in Medicine and Surgery from the Autonomous University of Madrid
- Teaching collaborator for the subject of Otorhinolaryngology at the Faculty of Medicine of the UAM
- More than 30 ENT-related publications in scientific journals
- Author of 15 book chapters on Otolaryngology
- Specialized in Head and Neck Surgery

#### Dr. Rivera Schmitz, Teresa

- Head and Neck Section of the La Paz university hospital, Madrid
- Specialized in Laryngology
- Degree in Medicine and Surgery
- She studied at the Autonomous University of Madrid and completed her residency at the Unviersity Hospital Complex of Vigo
- Fellowship at the Bradford Royal Infirmary Hospital in the United Kingdom, in the field of Otology
- She has published several articles as author or co-author and has
  participated in some book chapters and papers in recent years In addition,
  she has participated in lectures and courses as a speaker in the field of
  voice and dysphagia





## Course Management | 17 tech

#### Dr. Pozo García, Susana

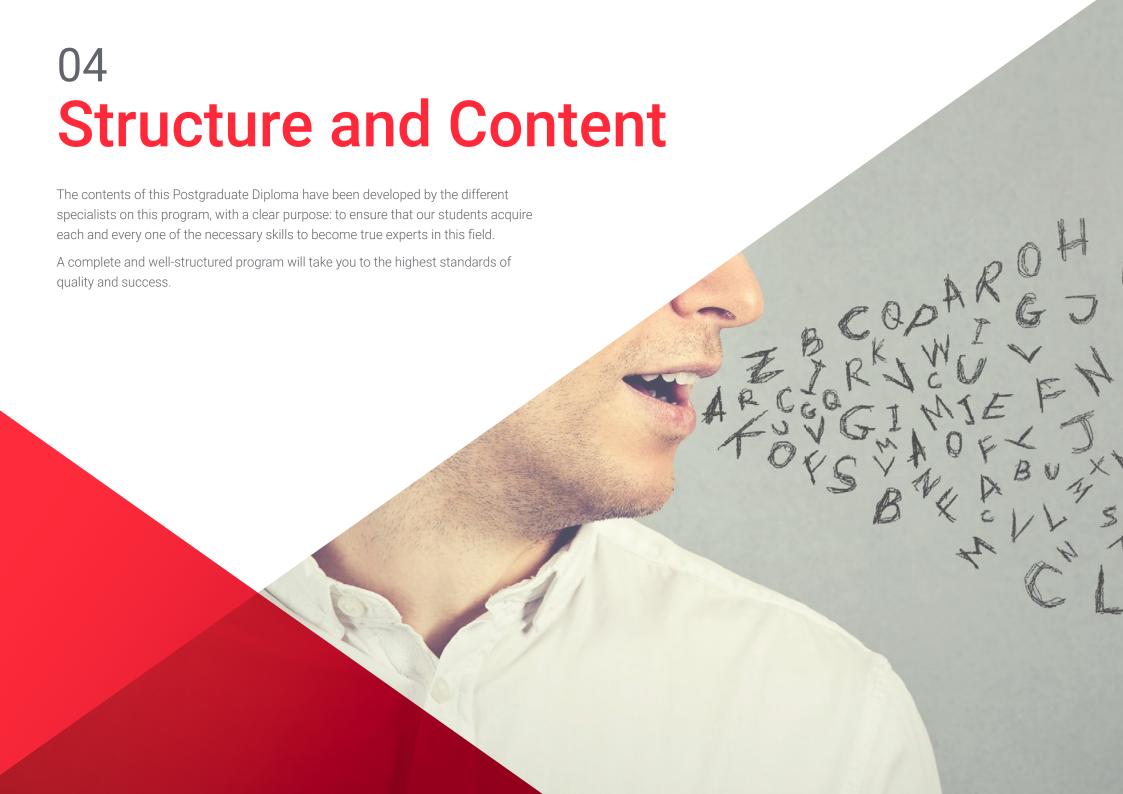
- Physiotherapist
- Director of the Fisyos Center in Andorra
- Specialist in Osteopathy Extensive training and clinical experience in myofascial induction, dry needling and lymphatic drainage
- Internship tutor at the Health Sciences University School of Zaragoza

#### Dr. Fernández Peñarroya, Raúl

- Director of the Fisyos center in Andorra
- Physiotherapist with extensive training in Rehabilitation
- Manual therapy, fascial treatment and dry needling
- Research activity on aspects of physiotherapy treatment in Parkinson's disease

#### Gómez, Agustín

- Speech therapist
- Director of the Alpadif center Albacete
- Associate Professor and collaborator of the Speech Therapy Degree at the UCLM
- Diverse voice training: CFP Estill Voice Training and PROEL, among others
- Actor with more than 20 years of experience in different independent theatrical companies





## tech 20 | Structure and Content

#### Module 1. Anatomical, Physiological and Biomechanical Basics of the Voice

- 1.1. Laryngeal Phylogeny and Embryology
  - 1.1.1. Laryngeal Phylogeny
  - 1.1.2. Laryngeal Embryology
- 1.2. Basic Concepts of Physiology
  - 1.2.1. Muscle Tissue
  - 1.2.2. Types of Muscle Fibers
- 1.3. Respiratory System Structures
  - 1.3.1. Chest
  - 1.3.2. Airways
- 1.4. Respiratory System Musculature
  - 1.4.1. Inspiratory Muscles
  - 1.4.2. Expiratory Muscles
- 1.5. Physiology of the Respiratory System
  - 1.5.1. Respiratory System Function
  - 1.5.2. Lung Capacities and Volumes
  - 1.5.3. Lung Nervous System
  - 1.5.4. Resting Breathing vs. Breathing in Phonation
- 1.6. Laryngeal Anatomy and Physiology
  - 1.6.1. Laryngeal Skeleton
  - 1.6.2. Laryngeal Cartilages
  - 1.6.3. Ligaments and Membranes
  - 1.6.4. Joints
  - 1.6.5. Musculature
  - 1.6.6. Vascularization
  - 1.6.7. Laryngeal Innervation
  - 1.6.8. Lymphatic System

- 1.7. Structure and Function of the Vocal Cords
  - 1.7.1. Histology of the Vocal Cords
  - 1.7.2. Biomechanical Properties of the Vocal Cords
  - 1.7.3. Phases of the Vibration Cycle
  - 1.7.4. Fundamental Frequency
- 1.8. Anatomy and Physiology of the Vocal Tract
  - 1.8.1. Nasal Cavity
  - 1.8.2. Oral Cavity
  - 1.8.3. Laryngeal Cavity
  - 1.8.4. Linear and Non-Linear Source and Filter Theory
- 1.9. Voice Production Theory
  - 1.9.1. Historical Recap
  - 1.9.2. Ewald's Primitive Myoelastic Theory
  - 1.9.3. Husson's Neurochronoxic Theory
  - 1.9.4. Completed Mucoondulatory Theory and Aerodynamic Theory
  - 1.9.5. Neurooscillatory Theory
  - 1.9.6. Oscillo-Impedial Theory
  - 1.9.7. Mass-Spring Models
- 1.10. The Physiology of Phonation
  - 1.10.1. Neurological Control of Phonation
  - 1.10.2. Pressure
  - 1.10.3. Thresholds
  - 1.10.4. Beginnings and Endings of the Vibration Cycle
  - 1.10.5. Laryngeal Adjustments for Phonation



## Structure and Content | 21 tech

#### Module 2. Objective Exploration of the Voice

- 2.1. Morphofunctional Exploration
  - 2.1.1. Indirect Laryngoscopy
  - 2.1.2. Nasofibrolaryngoscopy
  - 2.1.3. Telelaryngoscopy
  - 2.1.4. Stroboscopy
  - 2.1.5. Videochemography
- 2.2. Electroglottography
  - 2.2.1. Equipment
  - 2.2.2. Use
  - 2.2.3. Electroglottographic Parameters
  - 2.2.4. Interpretation of Results
- 2.3. Aerodynamic Measurements
  - 2.3.1. Equipment
  - 2.3.2. Use
  - 2.3.3. Aerodynamic Parameters
  - 2.3.4. Interpretation of Results
- 2.4. Electromyography
  - 2.4.1. What Does Electromyography Consist of?
  - 2.4.2. Indicated Pathologies
  - 2.4.3. Procedure
  - 2.4.4. Interpretation of Results
- 2.5. Videochemography
  - 2.5.1. What Does Videochemography Consist of?
  - 2.5.2. Interpretation of Results
- 2.6. Physical Aspects of the Voice
  - 2.6.1. Types of Waves
  - 2.6.2. Amplitude
  - 2.6.3. Frequency
  - 2.6.4. Time

## tech 22 | Structure and Content

- 2.7. Acoustic Aspects of Voice
  - 2.7.1. Intensity
  - 2.7.2. Pitch
  - 2.7.3. Duration
  - 2.7.4. Quality
- 2.8. Acoustic Analysis of Voice
  - 2.8.1. Fundamental Frequency
  - 2.8.2. Harmonics
  - 2.8.3. Formants
  - 2.8.4. Speech Acoustics
  - 2.8.5. The Spectrogram
  - 2.8.6. Disturbance Measures
  - 2.8.7. Noise Measures
  - 2.8.8. Voice Equipment/Laboratory
  - 2.8.9. Sample Collection
  - 2.8.10. Interpretation of Results

#### Module 3. Functional Evaluation of the Voice

- 3.1. Perceptual Assessment
  - 3.1.1. GRBAS
  - 3.1.2. RASAT
  - 3.1.3. GBR Score
  - 3.1.4. CAPE-V
  - 3.1.5. VPAS
- 3.2. Assessing Vocal Function
  - 3.2.1. Fundamental Frequency
  - 3.2.2. Phonetogram
  - 3.2.3. Maximum Phonatory Times
  - 3.2.4. Velo-Palatine Efficiency
  - 3.2.5. VHI



- 3.3. Medical History
  - 3.3.1. The Importance of the Clinical History
  - 3.3.2. Characteristics of the Initial Interview
  - 3.3.3. Medical History Sections and Voice Implications
  - 3.3.4. Proposal of a Model of Anamnesis for Vocal Pathology
- 3.4. Body Assessment
  - 3.4.1. Introduction
  - 3.4.2. Posture

3.4.2.1. Ideal or Correct Posture

- 3.4.3. Voice-Posture Relationship
- 3.4.4. Posture Assessment
- 3.5. Respiratory Assessment
  - 3.5.1. Respiratory Function
  - 3.5.2. Breathing-Voice Relationship
  - 3.5.3. Aspects to Assess
- 3.6. Assessment of the Stomatognathic System
  - 3.6.1. Stomatognathic System
  - 3.6.2. Relationships Between the Stomatognathic System and Voice Production
  - 3.6.3. Evaluation
- 3.7. Assessing Vocal Function
  - 3.7.1. Vocal Quality
  - 3.7.2. High Quality Voice vs. Low Quality Voice
  - 3.7.3. Vocal Quality Assessment in Voice Professionals
- 3.8. Software for Assessing Vocal Function
  - 3.8.1. Introduction
  - 3.8.2. Free Software
  - 3.8.3. Payment Software

- 3.9. Materials to Collect Information and Assess Vocal Function
  - 3.9.1. Medical History
  - 3.9.2. Reading text for Speech Sample Collection in Spanish
  - 3.9.3. Perceptual Assessment (After Medical History and Anamnesis)
  - 3.9.4. Self-Assessment
  - 3.9.5. Assessing Vocal Function
  - 3.9.6. Respiratory Assessment
  - 3.9.7. Stomatognathic Assessment
  - 3.9.8. Posture Assessment
  - 3.9.9. Acoustic Analysis of Vocal Quality



A comprehensive teaching program, structured in well-developed teaching units, oriented towards learning that is compatible with your personal and professional life"



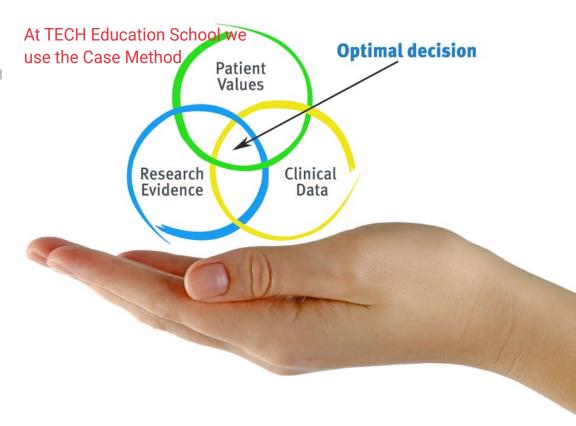


## tech 26 | Methodology

#### At TECH Education School we use the Case Method

In a given situation, what should a professional do? Throughout the program students will be presented with multiple simulated cases based on real situations, where they will have to investigate, establish hypotheses and, finally, resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method.

With TECH, educators can experience a learning methodology that is shaking the foundations of traditional universities around the world.



It is a technique that develops critical skills and prepares educators to make decisions, defend their arguments, and contrast opinions.



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:

- Educators who follow this method not only grasp concepts, but also develop their mental capacity, by evaluating real situations and applying their knowledge.
- 2. The learning process is solidly focused on practical skills that allow educators to better integrate the knowledge into daily practice.
- **3.** Ideas and concepts are understood more efficiently, given that the example situations are based on real-life teaching.
- **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.



## tech 28 | Methodology

#### **Relearning Methodology**

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

Our University is the first in the world to combine case studies with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, which represent a real revolution with respect to simply studying and analyzing cases.

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



## Methodology | 29 tech

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

With this methodology we have trained more than 85,000 educators with unprecedented success in all specialties. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

Relearning will allow you to learn with less effort and better performance, involving you more in your 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 our learning system is 8.01, according to the highest international standards.

## tech 30 | Methodology

This program offers the best educational material, prepared with professionals in mind:



#### **Study Material**

All teaching material is produced by the specialist educators who teach the course, specifically for the course, so that the teaching content is really specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



#### **Educational Techniques and Procedures on Video**

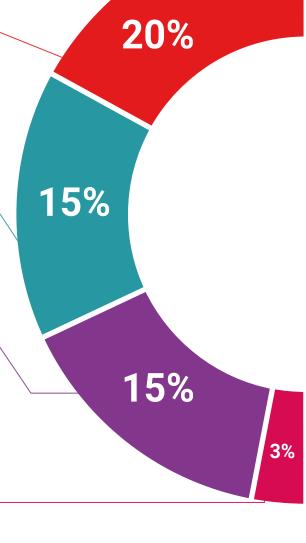
TECH introduces students to the latest techniques, with the latest educational advances, and to the forefront of Education. All this, first-hand, with the maximum rigor, explained and detailed for your assimilation and understanding. And best of all, you can watch them as many times as you want.



#### **Interactive Summaries**

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

This 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

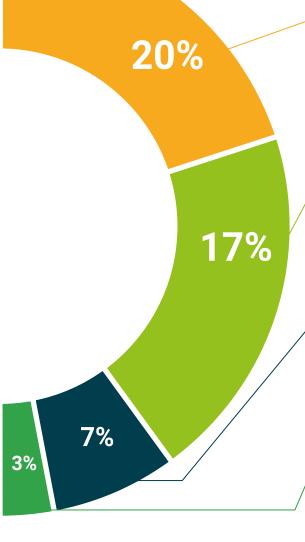
There is scientific evidence suggesting that observing third-party experts can be useful.

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.







## tech 34 | Certificate

This **Postgraduate Diploma in Biomechanics and Voice Assessment** contains the most complete and up-to-date program on the market.

After the student has passed the assessments, they will receive their corresponding Postgraduate Diploma **issued by TECH Technological University** via tracked delivery\*.

The certificate issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Diploma, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: Postgraduate Certificate in Biomechanics and Voice Assessment Official N° of Hours: **450 h.** 





## Postgraduate Diploma

Biomechanics and Voice Assessment

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

