

# Professional Master's Degree

## Pediatric Allergology

Endorsed by:





## Professional Master's Degree Pediatric Allergology

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

Website: [www.techtute.com/us/medicine/professional-master-degree/master-pediatric-allergology](http://www.techtute.com/us/medicine/professional-master-degree/master-pediatric-allergology)

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# 01

# Introduction

In the last decades, the prevalence of asthma in the pediatric field is notorious, where an increase in food allergies and anaphylaxis has also been reported, which undoubtedly constitutes a first level health problem. According to the European Academy of Allergology and Clinical Immunology, in less than 15 years more than half of the population will suffer from some type of allergy, so it is essential that specialists are up to date in those ages where the first symptoms of allergy may appear. This program makes a special emphasis on the immunological basis of the disorder, providing important new developments in immunotherapy, as well as the most effective practical aspects currently available. The specialist will find an opportunity to get up to date 100% online, without fixed timetable commitments or pre-established classes, with total freedom to adapt the syllabus to their own interests and responsibilities.







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*Get up to date with the most relevant advances in allergen-specific immunotherapy (AIT), which have allowed the development of pioneering treatments adapted to the needs of each patient"*

Advances in molecular diagnostics in pediatrics are particularly promising, as in recent years they have made it possible to fine-tune the patient's sensitization profile to the millimeter. This inevitably leads to a favorable framework for action, with a more personalized allergen-specific immunotherapy (AIT) adapted to the allergic conditions of each patient. The role of the specialists in the whole process of diagnosis and recommendation of the avoidance diet is crucial, so their level of updating must be high and constant.

A deeper knowledge of immune development in children allows us to understand the evolution of certain pathologies in childhood in later years. A team of teachers specialized in Pediatric Allergology has developed a complete syllabus that compiles not only the advances and developments in this field, but also its impact on clinical practice. In this way, the specialist obtains a necessary pragmatic vision from professionals widely versed in the field of allergies and immunology, thereby perfecting their own work methodologies and approach to each subject treated.

Throughout the program, the most frequent consultations in the Pediatric Allergology area as well as the rare pathologies that usually occur in childhood will be discussed. The specialist will cover, through high quality multimedia content, cutaneous allergic manifestations, food allergens, asthmatic pathologies in children and infants, frequent atopic dermatitis and other essential topics for a comprehensive and exhaustive update in a far-reaching clinical field.

All this, in addition, with the advantage of having the characteristic flexibility of a 100% online format. TECH is aware of how complicated it can be to combine a program of these characteristics with the most demanding medical activity, so it has eliminated both classroom classes and fixed schedules. It is the specialists themselves who decide how to distribute all the teaching content, being able to download it and study it from any device with an internet connection.

This **Professional Master's Degree in Pediatric Allergology** contains the most complete and up-to-date scientific program on the market. Its most notable features are:

- ◆ The development of practical cases presented by experts in Pediatric Allergology.
- ◆ The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice.
- ◆ Practical exercises where self-assessment can be used to improve learning.
- ◆ Its special emphasis on innovative methodologies
- ◆ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ◆ Content that is accessible from any fixed or portable device with an Internet connection.



*Get up to date with a team of highly committed teachers, who have compiled the most important practical developments in allergology protocols in this program"*

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*Access a virtual classroom that will be available 24 hours a day, full of high-quality multimedia content to delve further into all facets of Pediatric Allergology”*

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

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 education programmed to learn in real situations.

This program is designed around Problem-Based Learning, whereby professionals must try to solve the different professional practice situations that arise during the academic year.

For this purpose, students will be assisted by an innovative interactive video system created by renowned and experienced experts.

*You will be able to decide where, when and how to take on the entire course load, being able to study the entire syllabus from the comfort of your tablet or even smartphone of choice.*

*It delves into new developments in drug allergy, including antibiotic allergy, vaccines and drug desensitization.*



# 02 Objectives

Since the detection of allergies in pediatric age is crucial for a favorable diagnosis and treatment, the importance of the specialist's work in this context is crucial. Access to the most recent scientific advances and postulates allows a much broader and improved approach, so the objective of this program is to provide the specialist with the most current tools and knowledge in the field of Pediatric Allergology, in order to contribute effectively in their constant updating process.





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*Continue to refine your diagnostic methods and approach in Pediatric Allergology in 10 modules of content specifically geared to the most demanding clinical practice”*



## General Objectives

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- Have a comprehensive view of the most prevalent allergic pathologies in childhood.
- Study the basis, physiopathology, diagnosis and treatment of each pathology.
- Have the theoretical basis of complementary tests and their correct interpretation.
- Achieve adequate knowledge of component diagnosis in food and respiratory allergy.
- Know to manage asthma in the child, making a correct diagnosis and an appropriate treatment approach.



*You will have the latest educational technology available to meet your upgrade objective in the most convenient and effective way possible"*







## Specific Objectives

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### Module 1. Allergic Disease

- ♦ Gain knowledge about the cells involved in the immune system and the inflammatory mediators related to allergic diseases.
- ♦ Understand the mechanisms of allergen recognition and allergic inflammatory response.
- ♦ Know the main primary immunodeficiencies, and be able to suspect them and make a diagnostic orientation.
- ♦ Become familiar with the terminology used in allergic pathology.
- ♦ Delve into available *in vivo* and *in vitro* tests.
- ♦ Delve into the mechanisms by which tolerance is achieved.

### Module 2. Allergic Cutaneous, Systemic and Respiratory Manifestations

- ♦ Delve into the pathophysiology of acute urticaria and angioedema.
- ♦ Delve into the most frequent causes of acute urticaria and angioedema in the pediatric age group.
- ♦ Analyze the steps of treatment in chronic urticaria.
- ♦ Know how to define recurrent angioedema and make a correct differential diagnosis.
- ♦ Get to know the most frequent causes of recurrent angioedema in pediatric age.
- ♦ Know how to suspect the diagnosis of hereditary angioedema due to C1 inhibitor deficiency and perform a correct screening.
- ♦ Gain knowledge about the treatment possibilities in hereditary angioedema due to C1 inhibitor deficiency.
- ♦ Early recognition of anaphylaxis.

- ♦ Know how to give recommendations to the patient with anaphylaxis.
- ♦ Gain knowledge about the manifestations of mastocytosis in the pediatric age.
- ♦ Delve into the pathophysiology of exercise-induced anaphylaxis.
- ♦ Know how to recognize this condition, its possible causes and give appropriate recommendations to the patient.
- ♦ Recognize asthma attacks and know how to assess their severity at different ages.

### **Module 3. Food Allergy and the Most Frequent Food Allergens in the Pediatric Age Group**

- ♦ Analyze how an oral food tolerance test is performed.
- ♦ Delve into the indications for restrictive diets and active treatments for food allergy.
- ♦ Get to know the pathways of sensitization and tolerance to food allergens.
- ♦ Be able to comprehensively care for the patient with cow's milk protein allergy.
- ♦ Be able to comprehensively care for the patient with egg allergy.
- ♦ Get to know the common non-IgE-mediated food allergies of onset in infancy.
- ♦ Get to know the possible primary prevention measures in food allergy.

### **Module 4. Other Allergens Causing Food Allergy in Childhood**

- ♦ Gain knowledge about the prevalence of the different food allergies.
- ♦ In-depth study of the characteristics of the different allergenic sources.
- ♦ Get to know the natural history of food allergies in the pediatric age.
- ♦ Gain knowledge about how to perform and interpret a diagnosis by components in nut and seed allergy.
- ♦ Analyze the different patterns of sensitization to fruits and vegetables.
- ♦ Know how to make a correct diagnosis of cereal allergy.
- ♦ Identify possible adverse effects of some food additives and differentiate them from allergic reactions.
- ♦ Gain knowledge about the pathophysiology of eosinophilic esophagitis, the possible treatment routes and its relationship with food allergy in the pediatric age.

### **Module 5. Drug Allergies**

- ♦ Delve into the different mechanisms of hypersensitivity to drugs and their clinical manifestations.
- ♦ Analyze how drugs act as allergens.
- ♦ Gain knowledge about the technique and interpretation of *in vivo* drug tests: skin tests, intradermal tests, patch tests.
- ♦ Analyze the main reasons for suspicion of drug allergy in pediatrics.
- ♦ Know how to make a correct diagnosis of NSAIDs allergy.
- ♦ Know the difference between allergy and idiosyncrasy and their peculiarities.
- ♦ Delve into the alternatives that exist in pediatrics as anti-inflammatory drugs in patients allergic to NSAIDs.
- ♦ Know how to diagnose other antibiotics frequently used in pediatrics.



- ♦ Delve into the bases and indications to perform desensitization to drugs, knowing the existing protocols for its realization and how to assess the risk to which we expose the patient.
- ♦ Perform an etiological diagnostic approach in severe reactions.

### **Module 6. Asthma in the Infant and Young Child**

- ♦ Gain knowledge about what we call asthma in the young child, its pathophysiology and natural history.
- ♦ Delve into the different developmental and trigger phenotypes and their implications for the management of asthma in children.
- ♦ Get to know the prevalence of asthma in the young child, and the factors that promote it.
- ♦ Delve into the differential diagnosis and the tests necessary to rule out certain pathologies.
- ♦ Know the correct use of inhalers.

### **Module 7. Asthma in Older Children and Adolescents**

- ♦ Delve into the pathophysiology of asthma through the study of inflammatory cells and mediators.
- ♦ Delve into the current classification of phenotypes in asthma.
- ♦ Be able to make a correct diagnosis of asthma in the older child.
- ♦ Gain knowledge about the complementary tests that support the diagnosis of

asthma in the older child.

- ♦ Get to know which are the pathologies that usually coexist in the patient with asthma and their approach.

### **Module 8. Allergen-Specific Immunotherapy (AIT)**

- ♦ Get to know the history and evolution of allergen-specific immunotherapy (AIT).
- ♦ Delve into the mechanism of action by which they produce tolerance.
- ♦ Gain knowledge about the content of allergenic vaccines, and the role of each of the components.
- ♦ Delve into the different routes and patterns of administration, as well as the available allergens.
- ♦ Analyze future developments in immunotherapy and innovations in this line of treatment.

### **Module 9. Eye-Nasal Allergy**

- ♦ Delve into the impact of allergic rhinoconjunctivitis on the patient and society.
- ♦ Further treatment of rhinoconjunctivitis according to the ARIA guidelines.
- ♦ Get to know the geographic and climatic distribution of the different allergens.
- ♦ Be able to make a diagnosis by components to discern cross reactivities from real ones.

### **Module 10. Atopic Dermatitis**

- ♦ Be able to make a diagnosis of atopic dermatitis.
- ♦ Delve into clinical forms throughout the lifespan.
- ♦ Learn about the available scales for severity assessment.
- ♦ Perform health education advice for the care of atopic skin.
- ♦ Delve into the possible complications of atopic dermatitis and its treatment.
- ♦ Become familiar with the different drugs and routes of administration used in atopic dermatitis.

# 03 Skills

Pediatric Allergology is a field that demands a high level of precision and determination from the specialist when dealing with pathologies of all kinds, whether they are asthma, skin reactions or food allergies. That is why this program focuses its contents on enhancing the most important skills in this area, offering the practical application of all the advances discussed through simulated cases and videos in detail for each of the topics covered.



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*You will incorporate the latest advances in Pediatric Allergology into your daily practice even before you finish this program”*



## General Skills

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- ♦ Effectively address all aspects of Pediatric Allergology.
- ♦ Understand the natural history of certain allergic pathologies in childhood.
- ♦ Use the most up-to-date pathophysiological bases in allergic diseases.
- ♦ Have the most up-to-date allergy diagnosis and treatment available.

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*You will have the opportunity to expand your knowledge and skills in each topic through complementary readings carefully selected by the faculty”*







## Specific Skills

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- ◆ Perform a complete history and physical examination looking for stigmata of atopy.
- ◆ Know the main allergen families and their characteristics.
- ◆ Analyze the techniques for the evaluation of respiratory function in the child, being able to interpret them correctly.
- ◆ Become familiar with the basics of molecular diagnostics and its implementation in clinical practice.
- ◆ Recognize acute urticaria and angioedema and perform correct treatment.
- ◆ Define chronic urticaria, assess its severity and its impact on the patient's quality of life.
- ◆ Perform differential and causal diagnosis in the child with chronic urticaria.
- ◆ Perform a correct study of the patient with idiopathic anaphylaxis.
- ◆ Treat asthma attack according to the latest recommendations.
- ◆ Treat anaphylaxis in both in-hospital and out-of-hospital settings.
- ◆ Perform skin tests with extract and with fresh food, knowing the technique and the correct interpretation of the tests.
- ◆ Proper history taking in the pediatric patient with suspected food allergy.
- ◆ Answer questions about nutritional deficits in children with food allergies

- Get to know the different protocols of oral immunotherapy to cow's milk and egg.
- Perform and interpret a diagnosis by components in allergy to shellfish, fish, legumes, fruits and vegetables.
- Make dietary recommendations in patients with suspected food allergy.
- Suspect eosinophilic esophagitis and know its diagnostic criteria.
- Perform the care of the patient with eosinophilic esophagitis in conjunction with the pediatric gastroenterologist.
- Perform a proper controlled drug exposure test.
- Correctly diagnose suspected beta-lactam allergy in a child.
- Perform a cross-reactivity profile on the patient in order to develop a search for treatment alternatives.
- Recognize serious reactions, infrequent in children, such as DRESS syndrome or Stevens-Johnson syndrome, among others.
- Recommend and teach different inhalation techniques according to the age of the patient.
- Diagnose asthma in infants and pre-schoolers.
- Get to know the GINA and GEMA guidelines and their stepwise treatment.
- Analyze how inhaled therapy works and the factors that condition pulmonary deposition.
- Perform differential diagnosis of asthma in this age fraction.





- ♦ Be able to identify and manage severe asthma in the child.
- ♦ Know and manage the stepwise treatment of asthma, and the assessment of control.
- ♦ Analyze approved biologic therapies for the treatment of severe asthma in children.
- ♦ Gain knowledge how component diagnostics can help indicate the most appropriate vaccine for each patient.
- ♦ Assess response and carry out activities to improve therapeutic adherence.
- ♦ Know the factors related to possible adverse reactions in order to be able to prevent them.
- ♦ Choose the right candidate for immunotherapy.
- ♦ Get to know the pathophysiology and etiopathogenesis of allergic rhinoconjunctivitis.
- ♦ Be able to make a diagnosis and differentiate it from other rhinitis due to other causes.
- ♦ Analyze particle characteristics and their relationship to potential clinical.
- ♦ Perform maintenance treatment to prevent exacerbations.
- ♦ Treat the exacerbation of atopic dermatitis.
- ♦ Know when it is recommended to screen for food allergy as a causal factor in atopic dermatitis, and how to do it.
- ♦ Analyze the differential characteristics of contact dermatitis and the most frequent causes in children.



# 04

# Course Management

Given the high specificity of all the topics covered, TECH has brought together for this program a multidisciplinary team in the field of pediatrics, with a clear focus on the areas of Pediatric Allergy, Pulmonology and Clinical Immunology. In this way, specialists have first-hand access to content prepared by experts in each of the topics, who also endorse the clinical success and practical knowledge offered throughout the program.





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*You will be able to consult directly with the teaching staff all your doubts regarding Pediatric Allergology, resulting in a much more personalized and closer educational experience"*

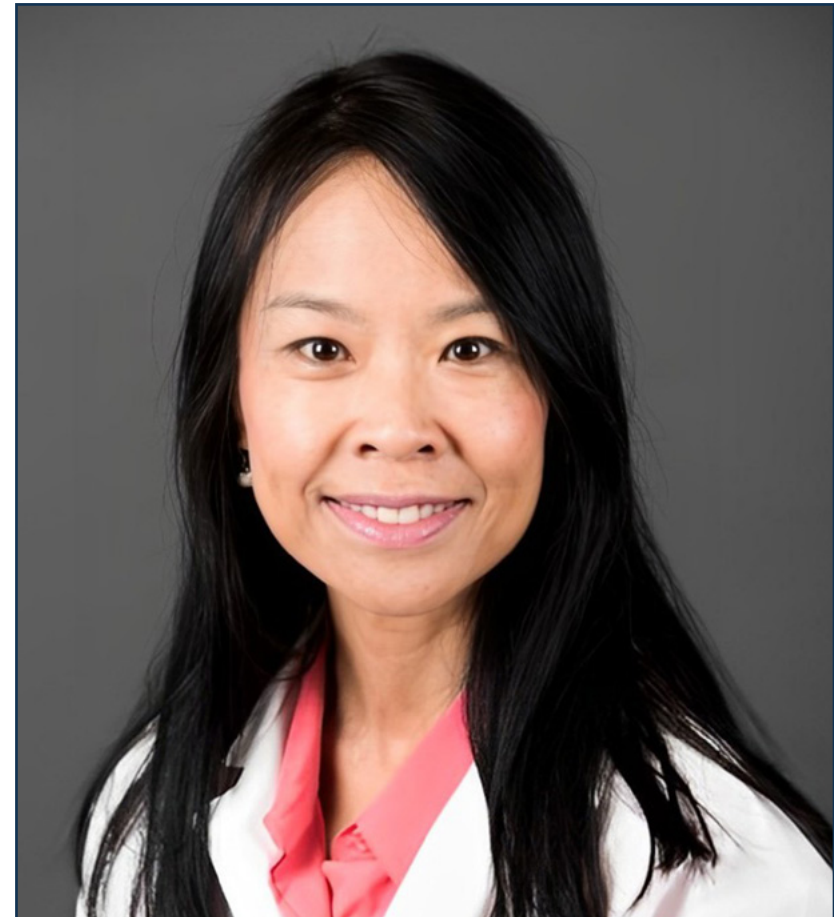
## International Guest Director

With a long and exhaustive specialization in Pediatric Immunology, Dr. Wanda Phipatanakul has dedicated her medical career to the re-education and prevention of Asthma and Allergic Diseases. Her most significant contribution to this field of health has been to promote the construction of a deep network of community relations and to carry out several studies in schools and homes directly.

With this research approach, the expert seeks to reduce the social disparity in access to early diagnosis and treatment. For this reason, her projects have received continuous funding for more than 2 decades from the National Institute of Health of the United States (NIH). Her most important current projects are an Asthma Intervention in Schools study, together with the National Institute of Allergy and Infectious Diseases (NIAID), and an evaluation of the Sleep Environment in Youth, in collaboration with the National Heart, Lung and Blood Institute (NHLBI).

On the other hand, he participates in research on the use of Omalizumab for the prevention of chronic respiratory diseases and atopic progression. She is also leading an analysis on the response to Dupilumab in asthmatic patients with a specific genetic variant. All this while serving as Director of the Immunology Research Center at Boston Children's Hospital and teaching in academic programs at Harvard Medical School.

She is also a prolific author with over 400 scientific publications in top impact journals such as JAMA and the New England Journal of Medicine. She is also an associate editor of the Journal of Allergy Clinical Immunology (JACI). She has received numerous awards from institutions such as the American Academy of Pediatrics and is an honorary member of several academic societies.



## Dra. Phipatanakul, Wanda

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- Director of the Immunology Research Center at Boston Children's Hospital, United States
- Academician in the Division of Immunology and Allergy at Harvard University Medical School
- Leader of several joint research projects with the NIH, NIAID and the NHLBI
- Associate Editor of the Journal of Allergy Clinical Immunology
- Author of over 400 publications in top impact scientific journals JAMA and the New England Journal of Medicine
- Medical Degree from Loma Linda University
- Immunology Research Fellow at Johns Hopkins University
- Member of: American Academy of Pediatrics, American Academy of Allergy, Asthma and Immunology, American Society for Clinical Investigation, American Association of Physicians



*Thanks to TECH, you will be able to learn with the best professionals in the world"*

## Management



### Dr. Troyano Rivas, Carmen

- ♦ Assistant Physician of the Pediatrics Department in the Pulmonology and Pediatric Allergy Section of the 12 de Octubre University Hospital.
- ♦ Collaborating Professor at the Complutense University of Madrid.
- ♦ Degree in Medicine from the Complutense University of Madrid.
- ♦ MIR Specialist in Pediatrics and its specific areas at the La Fe University Hospital, Valencia.

## Professors

### Dr. Quevedo Teruel, Sergio

- ♦ Specialist Pediatrician at Severo Ochoa Hospital
- ♦ PhD in Advances in Pediatrics from the Autonomous University in Madrid
- ♦ Doctorate in Social and Health Research at the Alfonso X El Sabio University.
- ♦ Degree in Medicine and Surgery from the Complutense University of Madrid
- ♦ Master's Degree of Neonatology of the Seneo at the Catholic University of Valencia San Vicente Martir

### Dr. Valderrama Arnay, Sara

- ♦ Specialist in Pediatric Allergy and Pulmonology at the Móstoles University Hospital.
- ♦ Honorary Tutor at Rey Juan Carlos University
- ♦ Degree in Medicine from the Complutense University of Madrid
- ♦ Specialty in Pediatric Allergy and Pulmonology at the 12 de Octubre University Hospital.



**Dr. Muñoz Archidona, Cristina**

- ♦ Pediatric Specialist in outpatient Allergology and Pediatric Pulmonology at the Móstoles University Hospital.
- ♦ Responsible and coordinator of outpatient consultations in Pediatric Pulmonology at the General Hospital of Villalba.
- ♦ Pediatric Specialist at the Ramón y Cajal University Hospital and Henares University Hospital.
- ♦ Degree in Medicine from the Autonomous University Madrid
- ♦ Specialty in Pediatrics at the Severo Ochoa University Hospital.
- ♦ Master's Degree in Pediatric Emergencies at the CEU Cardenal Herrera University
- ♦ Expert in Pediatric Trauma, Pediatric Critical Patient, Pediatric Emergencies and Pediatric Vital Emergencies at CEU Cardenal Herrera University.

**Dr. Garriga Baraut, Teresa**

- ♦ Specialist in Allergology at Valle de Hebron Hospital.
- ♦ Resident Allergology Physician at Valle de Hebron Hospital.
- ♦ Doctorate in Medicine at the Autonomous University of Barcelona.
- ♦ Degree in Medicine from the University of Barcelona.

**Dr. García Magán, Carlos**

- ♦ Specialist in Pediatrics at the Santiago de Compostela Hospital.
- ♦ Degree in Medicine from the University of Santiago de Compostela.
- ♦ Specialty in Pediatrics at the Santiago de Compostela Hospital.
- ♦ Master's Degree in Genetics, Nutrition and Environmental Conditional Factors for Growth and Development
- ♦ Master's Degree in Neonatology

**Dr. Mesa del Castillo Payá, María**

- ♦ Specialist in Pediatrics and Allergology at El Escorial University Hospital.
- ♦ Vice President of SEICAP, Spanish Society of Clinical Immunology, Allergy and Pediatric Asthma.
- ♦ Hospital Tutor for Family and Community Medicine Residents at the El Escorial University Hospital.
- ♦ Specialty via MIR in Allergology and Clinical Immunology at the San Carlos Clinical Hospital.
- ♦ Specialty via MIR in Pediatrics and Specific Areas at the Ramón y Cajal Hospital.

**Dr. Canals Candela, Francisco José**

- ♦ Associate Professor of Pediatrics at the Miguel Hernández d'Elx University.
- ♦ Specialist in Pediatrics and Head of the Pediatric Allergology Clinic at the General University Hospital of Elche.
- ♦ Specialist in Pediatrics at the ASISA Elche Medical Center
- ♦ Specialist in Pediatrics at the Denia Hospital and the General University Hospital of Elda.
- ♦ Doctorate in Medicine from the University of Murcia
- ♦ Degree in Medicine in the University of Miguel Hernández de Elche
- ♦ Specialist in Pediatrics and its specific areas at the Elche General University

**Dr. Morales Tirado, Ana**

- ♦ Specialist in Pediatrics at Ramón y Cajal University Hospital
- ♦ Specialist in Pediatrics at 12 de Octubre University Hospital, Móstoles Hospital and San Rafael Hospital
- ♦ Degree in Medicine from the Complutense University of Madrid

**Dr. Cortés Álvarez, Nuria**

- ♦ Pediatrician attached to the Pediatric Allergy Section of the Mútua Terrassa University Hospital.
- ♦ Pediatrician on duty in Neonatology and Pediatrics at the Mútua Terrassa University Hospital.
- ♦ Pediatrician in Pediatric Allergy consultation at the Children's Hospital of Barcelona.
- ♦ Pediatrician
- ♦ D. in Pediatrics from the University of Barcelona.
- ♦ Degree in Medicine and Surgery from the University of Barcelona
- ♦ Specialty in Pediatrics and its Specific Areas via MIR at the Maternal-Children's Hospital of Vall d'Hebron
- ♦ Master's Degree in Pediatric Immunology and Allergy at the Sant Joan de Déu Hospital

**Dr. Mansilla Roig, Beatriz**

- ♦ Specialist in Pediatric Allergology
- ♦ PhD in Medicine from the University of Valencia
- ♦ Specialist in Pediatrics and Specialized Areas Doctor Peset Hospital
- ♦ Master's Degree in Pediatrics in Primary Care by the Complutense University of Madrid







- ♦ Master's Degree in Pediatric Dermatology by CEU Cardenal Herrera University CEU Cardenal Herrera University (2020- 2021)

#### **Dr. Tortajada Gírbés, Miguel**

- ♦ Head of Pulmonology and Pediatric Allergy at the La Fe University and Polytechnic Hospital of Valencia.
- ♦ Doctor in Medicine and Surgery from the Faculty of Medicine of the University of Valencia with the mention of "Excellent Cum Laude".
- ♦ Accredited: European Accreditation in Pediatric Allergy and Clinical Immunology by the European Academy of Allergology and Clinical Immunology (EAACI), Spanish Accreditation in Pediatric Allergy, Clinical Immunology, Asthma and Pulmonology Spanish Association of Pediatrics (AEP).

#### **Dr. Navío Anaya, María**

- ♦ Specialist in Pediatrics and its specific areas at Doctor Peset University Hospital, Valencia
- ♦ Degree in Medicine. Jaime Primero University. Castellón
- ♦ Professional associations: Official School of Physicians of Valencia, Valencian Society of Pediatrics, Spanish Association of Pediatrics.

# 05

# Structure and Content

In order to facilitate as much as possible the study work of the specialist, TECH has incorporated the pedagogical methodology of *Relearning* in the development of this program. This technique has proven to be very effective and allows the specialist to naturally assume the most important concepts and keys in pediatric allergies. This is achieved by naturally reiterating these concepts throughout the syllabus, which also results in a significant reduction in the number of study hours required to pass the program.







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*Benefit from the most academically successful teaching methodology and update your knowledge in Pediatric Allergology in a fast, efficient and exhaustive way”*

## Module 1. Allergic Disease

- 1.1. Epidemiology
  - 1.1.1. Prevalence of Allergic Disease
  - 1.1.2. Genetic, Epigenetics and Environmental Factors
- 1.2. Immune System Development
  - 1.2.1. Fetal Immunity
  - 1.2.2. Immune System Maturation
- 1.3. Inborn Errors of the Immune System
  - 1.3.1. Main Primary Immunodeficiencies
  - 1.3.2. Warning Signs
  - 1.3.3. Allergic Manifestations
  - 1.3.4. Diagnostic Approximation
  - 1.3.5. Treatment
- 1.4. Allergic Sensitization
  - 1.4.1. Cells Involved
  - 1.4.2. Inflammatory Mediators
  - 1.4.3. Sensitization Pathways
- 1.5. Tolerance Mechanisms
  - 1.5.1. Factors Influencing the Achievement of Tolerance
  - 1.5.2. Immunological Basis
- 1.6. Atopic Gait
- 1.7. General Evaluation of the Allergic Patient
  - 1.7.1. General Medical Records
  - 1.7.2. Findings on Physical Examination Suggestive of Atopy
  - 1.7.3. General Notions of Diagnostic Tests in Allergy
- 1.8. Terminology.
  - 1.8.1. Allergy. Sensitization
  - 1.8.2. Allergenic Source. Allergens. Cross-Reactivity



- 1.9. Molecular Diagnoses
  - 1.9.1. Current Indications and Limitations
  - 1.9.2. Approach to Molecular Diagnostics
  - 1.9.3. Most Relevant Allergen Families
- 1.10. Respiratory Function Tests in Children
  - 1.10.1. Spirometry and Bronchodilation Test
  - 1.10.2. Bronchial Provocation Tests
  - 1.10.3. Tests for Measuring Eosinophilic Inflammation
  - 1.10.4. Others Diagnostic Methods

## Module 2. Allergic Cutaneous, Systemic and Respiratory Manifestations

- 2.1. Acute Urticaria
  - 2.1.1. Pathophysiology
  - 2.1.2. Frequent Etiology in the Child
  - 2.1.3. Anamnesis and Physical Examination
  - 2.1.4. The Role of Antihistamines in the Treatment of Acute Urticaria
- 2.2. Chronic Urticaria
  - 2.2.1. Etiopathogenesis
  - 2.2.2. Classification
  - 2.2.3. Diagnosis
  - 2.2.4. Treatment
- 2.3. Acute Angioedema
  - 2.3.1. Pathophysiology
  - 2.3.2. Frequent Etiology in the Child
  - 2.3.3. Anamnesis and Physical Examination
  - 2.3.4. Treatment
- 2.4. Recurrent Angioedema
  - 2.4.1. Etiopathogenesis
  - 2.4.2. Classification
  - 2.4.3. Diagnosis
  - 2.4.4. Treatment



- 2.5. Angioedema due to C1 Inhibitor Deficiency
  - 2.5.1. Etiopathogenesis
  - 2.5.2. Classification
  - 2.5.3. Diagnosis
  - 2.5.4. Treatment
- 2.6. Anaphylaxis
  - 2.6.1. Pathophysiology
  - 2.6.2. Etiology
  - 2.6.3. Treatment
  - 2.6.4. Prevention
- 2.7. Idiopathic Anaphylaxis
  - 2.7.1. Differential Diagnosis
  - 2.7.2. Diagnosis
  - 2.7.3. Treatment
- 2.8. Exercise-Induced Anaphylaxis
  - 2.8.1. Etiopathogenesis
  - 2.8.2. Classification
  - 2.8.3. Diagnosis
  - 2.8.4. Treatment
- 2.9. Mastocytosis in Children
  - 2.9.1. Prevalence
  - 2.9.2. Mastocytoma
  - 2.9.3. Urticaria Pigmentosa
  - 2.9.4. Diagnosis and Monitoring
  - 2.9.5. Treatment
- 2.10. Treatment of Asthma Attack
  - 2.10.1. Severity Assessment
  - 2.10.2. Treatment Algorithm
  - 2.10.3. Response Assessment and Discharge Recommendations

## Module 3. Food Allergy and the Most Frequent Food Allergens in the Pediatric Age Group

- 3.1. Approach to the Patient with Food Allergy
  - 3.1.1. Medical History
  - 3.1.2. Diagnostic Generalities
    - 3.1.2.1. Skin Tests
    - 3.1.2.2. Oral Tolerance Tests
    - 3.1.2.3. *In Vitro* Determination
  - 3.1.3. Treatment of Food Allergy
    - 3.1.3.1. Avoidance
    - 3.1.3.2. Active Treatments
- 3.2. Food Allergens Approach
  - 3.2.1. General Aspects
  - 3.2.2. Protein Stability
  - 3.2.3. Effects of Processing
  - 3.2.4. The Digestive System as an Immune Organ
- 3.3. Allergy to Cow's Milk Proteins
  - 3.3.1. Epidemiology
  - 3.3.2. Natural History
  - 3.3.3. Diagnosis
- 3.4. Avoidance Therapy in Cow's Milk Protein Allergy
  - 3.4.1. Hydrolyzed Formulas
  - 3.4.2. Vegetable Formulas
- 3.5. Oral Immunotherapy to Cow's Milk Proteins
  - 3.5.1. Indications
  - 3.5.2. Rapid Protocol
  - 3.5.3. Slow Protocol for Anaphylactic Patients
- 3.6. Egg Allergy
  - 3.6.1. Epidemiology
  - 3.6.2. Natural History
  - 3.6.3. Diagnosis
  - 3.6.4. Treatment



- 3.7. Oral Egg Immunotherapy
  - 3.7.1. Indications
  - 3.7.2. Tolerance Induction with Raw Egg
  - 3.7.3. Tolerance Induction with Boiled Egg
  - 3.7.4. Tolerance Induction with Baking
- 3.8. Non-IgE-Mediated Allergies
  - 3.8.1. Allergic Proctocolitis
  - 3.8.2. Food Protein-Induced Enterocolitis
  - 3.8.3. Food Protein Enteropathy
- 3.9. Nutritional Aspects of Food Allergy
- 3.10. Possible Interventions in the Primary Prevention of Cow's Milk and Egg Allergy

#### Module 4. Other Allergens Causing Food Allergy in Childhood

- 4.1. Nut and Seed Allergy
  - 4.1.1. Epidemiology
  - 4.1.2. Natural History
  - 4.1.3. Diagnosis
  - 4.1.4. Treatment
- 4.2. Allergy to Shellfish and Fish
  - 4.2.1. Shellfish Allergy
    - 4.2.1.1. Epidemiology
    - 4.2.1.2. Natural History
    - 4.2.1.3. Diagnosis
    - 4.2.1.4. Treatment
  - 4.2.2. Fish Allergy
    - 4.2.2.1. Epidemiology
    - 4.2.2.2. Natural History
    - 4.2.2.3. Diagnosis
    - 4.2.2.4. Treatment
- 4.3. Legume Allergy
  - 4.3.1. Epidemiology
  - 4.3.2. Natural History
  - 4.3.3. Diagnosis
  - 4.3.4. Treatment
- 4.4. Oral Allergy Syndrome
  - 4.4.1. Epidemiology
  - 4.4.2. Natural History
  - 4.4.3. Diagnosis
  - 4.4.4. Treatment
  - 4.4.5. Latex-Fruit Syndrome
- 4.5. LTP Sensitization Syndrome
  - 4.5.1. Epidemiology
  - 4.5.2. Natural History
  - 4.5.3. Diagnosis
  - 4.5.4. Treatment
- 4.6. Allergy to Cereals
  - 4.6.1. Epidemiology
  - 4.6.2. Natural History
  - 4.6.3. Diagnosis
  - 4.6.4. Treatment
- 4.7. Allergy to Food Additives and Preservatives
- 4.8. Induction of Tolerance to Other Foods
  - 4.8.1. Current Evidence
  - 4.8.2. New Forms of Immunotherapy with Food
- 4.9. Eosinophilic Esophagitis and its Relation to Food Allergy
- 4.10.
  - 4.10.1. Recommendations to the Patient

## Module 5. Drug Allergies

- 5.1. Adverse Reactions to Medications
  - 5.1.1. Classification of Hypersensitivity Reactions
  - 5.1.2. Drugs as Allergens
- 5.2. Diagnostic Approximation
  - 5.2.1. Peculiarities in the Child
  - 5.2.2. Medical History
- 5.3. Allergy to Beta-Lactams
  - 5.3.1. Penicillin. Chemical Structure and Classification
  - 5.3.2. Side Chain Allergens
  - 5.3.3. Allergens by Central Core
  - 5.3.4. Medical History
  - 5.3.5. Diagnosis
  - 5.3.6. Avoidance Recommendations According to Results
  - 5.3.7. Allergy to Cephalosporins and Cross-Reactivity with Penicillin Derivatives
- 5.4. Allergy to NSAIDs
  - 5.4.1. NSAIDs Classification Scheme
  - 5.4.2. Types of Reactions to NSAIDs
  - 5.4.3. Diagnosis
  - 5.4.4. Avoidance Recommendations
  - 5.4.5. Possible Alternative Drugs in Children
- 5.5. Allergy to Other Antibiotics
  - 5.5.1. Macrolides
  - 5.5.2. Sulfamides
  - 5.5.3. Quinolones
  - 5.5.4. Aminoglycosides
  - 5.5.5. Glycopeptides
- 5.6. Allergy to Local Anesthetics and Perioperative Anaphylaxis
  - 5.6.1. Suspicion of Perioperative Allergic Reaction
  - 5.6.2. Tests to be Performed for Screening of the Responsible Drug
  - 5.6.3. Suspicion of Allergy to Local Anesthetics

- 5.7. Vaccine Allergy
  - 5.7.1. Types of Vaccine Reactions
  - 5.7.2. Vaccine Content
  - 5.7.3. Epidemiology of Vaccine Allergic Reactions
  - 5.7.4. Reactions that May Simulate Allergic Reaction After Vaccination
  - 5.7.5. Diagnosis of Allergy to Vaccines
  - 5.7.6. Vaccination Recommendations for those Allergic to any of the Following Components
- 5.8. Drug Desensitization
  - 5.8.1. Introduction
  - 5.8.2. Desensitization Mechanism
  - 5.8.3. Risk Evaluation
  - 5.8.4. Desensitization Protocols
- 5.9. Severe Manifestations of Non-IgE-Mediated Reactions to Drugs
  - 5.9.1. DRESS
  - 5.9.2. Lynch-Like Stevens-Johnson
  - 5.9.3. Acute Generalized Exanthematous Pustulosis
  - 5.9.4. Other Systemic Manifestations
- 5.10. Approach to Diagnosis in Severe Non-IgE Mediated Reactions

## Module 6. Asthma in the Infant and Young Child

- 6.1. The Debate Between Recurrent Wheezing and Asthma
- 6.2. Prevalence Around the World
- 6.3. Natural History
  - 6.3.1. Tucson Phenotypes
  - 6.3.2. Phenotypes by Triggers
  - 6.3.3. IPA Index
- 6.4. Etiopathogenesis
- 6.5. Risk Factors
  - 6.5.1. From the Guest
  - 6.5.2. Perinatal

- 6.5.3. Environmental.
- 6.6. Diagnosis
  - 6.6.1. Clinical and Anamnesis
  - 6.6.2. Complementary Tests
  - 6.6.3. Evaluation of Severity
  - 6.6.4. Assessment of Control
- 6.7. Differential Diagnosis
- 6.8. Medical Treatment
  - 6.8.1. Treatment Steps
  - 6.8.2. Drugs Available for Asthma in Children Under 3 Years of Age
- 6.9. Non-Pharmacological Treatment
  - 6.9.1. Environmental Measurements
  - 6.9.2. Immunizations
- 6.10. Inhaled Therapy in Children
  - 6.10.1. Fundamentals of Inhaled Therapy: Particle Characteristics and Pulmonary Deposition
  - 6.10.2. Correct use of Inhalers According to Age

## Module 7. Asthma in Older Children and Adolescents

- 7.1. Prevalence
- 7.2. Pathophysiology
  - 7.2.1. Cells Involved in Asthma
  - 7.2.2. Inflammatory Mediators
  - 7.2.3. Airway Obstruction Mechanisms
- 7.3. Phenotypes of Asthma
  - 7.3.1. Th2 Phenotype
  - 7.3.2. Non-Th2 Phenotype
- 7.4. Diagnosis
  - 7.4.1. Pulmonary Function
  - 7.4.2. Reversibility
  - 7.4.3. Other Markers of Inflammation

- 7.5. Differential Diagnosis
- 7.6. Comorbidities
  - 7.6.1. Rhinosinusitis
  - 7.6.2. Sleep Apnea-Hypopnea Syndrome (SAHS)
  - 7.6.3. Gastroesophageal Reflux
  - 7.6.4. Obesity
  - 7.6.5. Atopic Dermatitis
- 7.7. Medical treatment
  - 7.7.1. Treatment Steps
  - 7.7.2. Available Drugs
- 7.8. Non-Pharmacological Treatment
  - 7.8.1. Asthma Education
- 7.9. Uncontrolled Severe Asthma
- 7.10. Approved Biological Treatments in the Pediatric Population

## Module 8. Allergen-Specific Immunotherapy (AIT)

- 8.1. Immunotherapy
- 8.2. Mechanism of Action
- 8.3. Content of Allergenic Vaccines
  - 8.3.1. Types of Extracts
  - 8.3.2. Adjuvants
- 8.4. Indications and Contraindications of Immunotherapy
- 8.5. Effectiveness of Immunotherapy
  - 8.5.1. Short-Term Efficacy
  - 8.5.2. Long-Term Efficacy
  - 8.5.3. Improving Efficiency through Molecular Diagnostics
  - 8.5.4. Allergen Mixtures and Immunotherapies
- 8.6. Safety of Immunotherapy
  - 8.6.1. Local Reactions

- 8.6.2. Systemic Reactions
- 8.7. Types of Immunotherapy
  - 8.7.1. By Route of Administration
  - 8.7.2. By Guidelines of Administration
  - 8.7.3. By Type of Allergen
- 8.8. Practical Management of Immunotherapy
  - 8.8.1. Starting Guidelines
  - 8.8.2. Duration of Immunotherapy
  - 8.8.3. Dose Adjustments
- 8.9. Monitoring and Adherence
  - 8.9.1. Evaluation of the Response
  - 8.9.2. How to Improve Adherence
- 8.10. Advances in Immunotherapy
  - 8.10.1. New Adjuvants
  - 8.10.2. New Routes of Administration

## Module 9. Eye-Nasal Allergy

- 9.1. Prevalence
  - 9.1.1. Quality of Life of the Patient with Eye-Nasal Allergy
  - 9.1.2. Socio-Economic Cost
- 9.2. Etiopathogenesis
- 9.3. Diagnosis of Rhinoconjunctivitis
  - 9.3.1. Clinical symptoms
  - 9.3.2. Etiological
- 9.4. Differential Diagnosis
- 9.5. Pharmacological Treatment of Allergic Rhinoconjunctivitis

- 9.6. Health Education for Allergen Avoidance
- 9.7. Pollen Allergy
  - 9.7.1. Epidemiology
  - 9.7.2. The Pollen Molecule
  - 9.7.3. Pollen Classification
  - 9.7.4. Geographical Distribution of Pollens
  - 9.7.5. Main Allergens
  - 9.7.6. Molecule Diagnostics in Pollen Allergy
- 9.8. Allergy to Animal Epithelia
  - 9.8.1. Epidemiology
  - 9.8.2. Main Allergens
  - 9.8.3. Molecular Diagnosis in Allergy to Animal Epithelia
- 9.9. Dust Mite Allergy
  - 9.9.1. Epidemiology
  - 9.9.2. Mites
  - 9.9.3. Distribution of Mites according to Climate
  - 9.9.4. Main Allergens
  - 9.9.5. Molecular Diagnoses
- 9.10. Allergy to Damp Fungi
  - 9.10.1. Epidemiology
  - 9.10.2. Moisture Mould
  - 9.10.3. Distribution of Fungi according to Climate
  - 9.10.4. Main Allergens
  - 9.10.5. Molecular Diagnoses

## Module 10. Atopic Dermatitis

- 10.1. Etiopathogenesis
  - 10.1.1. Predisposing Factors
  - 10.1.2. Skin Barrier Dysfunction





- 10.1.3. Immunological Alterations
- 10.2. Diagnosis
  - 10.2.1. Clinical diagnosis
  - 10.2.2. Severity Assessment
  - 10.2.3. Differential Diagnosis
- 10.3. Complications of Atopic Dermatitis
  - 10.3.1. Infectious
  - 10.3.2. Non-Infectious
- 10.4. General Guidelines for Atopic Skin Care
  - 10.4.1. Hygiene
  - 10.4.2. Feeding
  - 10.4.3. Dresses and Clothing
  - 10.4.4. Environmental Guidelines
- 10.5. Treatment Objectives
  - 10.5.1. Treatment of the Inflammation
  - 10.5.2. Itching Control
  - 10.5.3. Restoration of the Skin Barrier
- 10.6. Topical Drugs
  - 10.6.1. Emollients
  - 10.6.2. Topical corticosteroids
  - 10.6.3. Use of Topical Immunomodulators
- 10.7. Systemic Treatment
  - 10.7.1. Antihistamines
  - 10.7.2. Systemic Corticoids
  - 10.7.3. Systemic Immunomodulators
  - 10.7.4. Biological Drugs
- 10.8. Treatment of Infectious Complications
  - 10.8.1. Infections of Viral Etiology
  - 10.8.2. Infections of Bacterial Etiology
- 10.9. When and How to Assess Food Allergy as a Cause of Atopic Dermatitis?
- 10.10. Contact Dermatitis

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



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

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

1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that assess 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

TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

We enhance the Case Study with the best 100% online teaching method: Relearning.

*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 prepared with unprecedented success in all clinical specialties regardless of surgical load. Our educational 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 adapted in audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high-quality pieces in each and every one of the materials that are made available to the student.



#### Surgical Techniques and Procedures on Video

TECH introduces students to the latest techniques, the latest educational advances and to the forefront of current medical techniques. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch the videos as many times as you like.



#### Interactive Summaries

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

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



#### Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.







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

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



#### Testing & Retesting

We periodically assess and re-assess students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.



#### Classes

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



#### Quick Action Guides

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



# 07 Certificate

The Professional Master's Degree in Pediatric Allergology guarantees students, in addition to the most rigorous and up-to-date education, access to a Professional Master's Degree issued by Pediatric Allergology.



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*Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork”*



This program will allow you to obtain your **Professional Master's Degree diploma in Pediatric Allergology** 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.

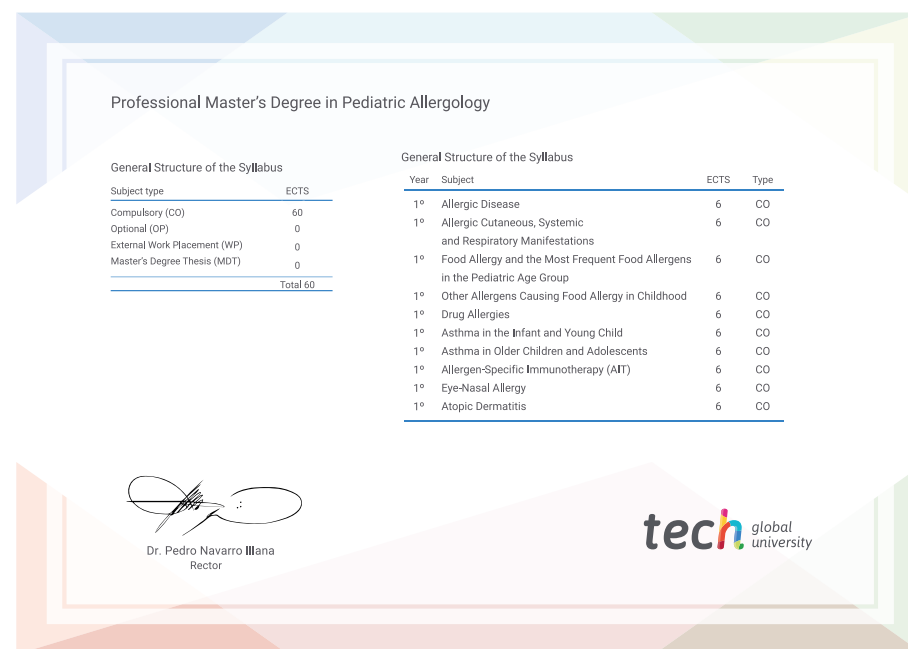
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Professional Master's Degree in Pediatric Allergology**

Modality: **online**

Duration: **12 months**

Accreditation: **60 ECTS**



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





## Professional Master's Degree Pediatric Allergology

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

# Professional Master's Degree

## Pediatric Allergology

Endorsed by:

