

Postgraduate Certificate

Anatomy and Physiology of the Hair





Postgraduate Certificate Anatomy and Physiology of Hair

Course Modality: **Online**

Duration: **2 months.**

Certificate: **TECH Technological University**

6 ECTS Credits

Teaching Hours: **150 hours.**

Website: www.techtute.com/medicine/postgraduate-certificate/anatomy-physiology-hair

Index

01

Introduction

p. 4

02

Objectives

p. 8

03

Course Management

p. 12

04

Structure and Content

p. 16

05

Methodology

p. 20

06

Certificate

p. 28

01

Introduction

All hair transplant professionals must be familiar with the characteristics of hair, its vital processes and all the circumstances that affect and compromise its correct development. This course offers you the possibility to train as a specialist in this field with the guarantee and solvency of the largest online university in the world.



“

A complete and advanced course that will give you all the necessary knowledge in anatomy and physiology of the hair, to become a specialist in the field"

We begin the Postgraduate Certificate with a review of anatomy and hair physiology, to know in depth both the hair and the dermis and to be able to correctly perform both surgical interventions and the treatment of their pathologies.

Acquire in-depth knowledge of the physiology of the skin and the pilosebaceous follicle.

Conduct a study of hair growth cycles.

Study of keratin and keratinization, as well as melanin and melanogenesis of hair.

Study the embryology and anatomy of the hair follicle, the anatomy of the sebaceous gland, the apocrine gland and the erector muscle, as well as their vascularization and innervation.

Study of the layers of the scalp, and study of the hair, its composition, properties and phases of hair growth.

Go through a thorough clinical history, as well as to evaluate in detail both the donor area, which must be adequate, and the recipient area, both key steps for achieving good capillary diagnosis.

We are going to learn how to perform a proper photographic study for medical records.

Learn to observe a photograph with the micro camera, distinguish the different follicular patterns, perifollicular, intrafollicular and differences in thickness and texture in the hair as a basis for establishing a correct hair diagnosis, and determine the treatment to be performed based on this.

Overview of the history of hair transplantation and medicine over the years, and the evolution and changes in this branch of aesthetic medicine, both in diagnosis and surgical techniques.

This **Postgraduate Certificate in Anatomy and Physiology of the Hair** contains the most complete and up-to-date scientific program on the market today, with the following notable features:

- ♦ Practical cases presented by experts in hair surgery.
- ♦ The latest developments in Hair Surgery, with special and dedicated attention to the innovative methodologies.
- ♦ Practical exercises where the self-evaluation process can be carried out to improve learning.
- ♦ Graphic contents, diagrams, and practical cases that gather scientific and practical information on the disciplines that are essential for professional hair surgery practice.
- ♦ Theoretical lessons, questions to experts and/or tutors, discussion forums on controversial issues and individual reflection work throughout the Postgraduate Diploma..
- ♦ Content that is accessible from any fixed or portable device with an Internet connection.



This Postgraduate Certificate in Anatomy and Physiology of the Hair will help you keep up to date to provide comprehensive, quality patient care"

“

A different Postgraduate Certificate due to its innovative teaching approach, its capacity to give you real online support and its total quality"

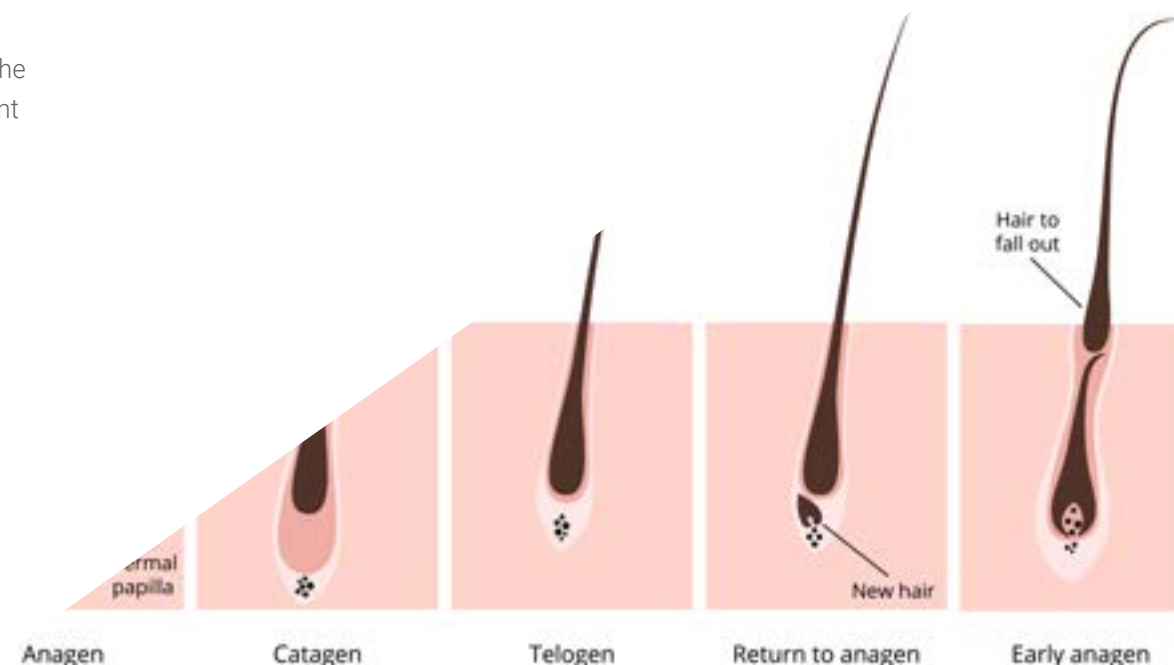
A multimedia program that will allow you to study in a simpler and more interactive way.

With learning strategies focused on practice, this specialization will allow you to learn in a real and immediate way.

The teaching staff includes professionals from the field of medicine, with extensive experience in hair transplantation, who bring their experience to this training program, as well as renowned specialists from leading societies and prestigious universities.

Its Multimedia Content, elaborated with the latest Educational Technology, will allow the Professional a situated and contextual learning, that is to say, a Simulated Environment that will provide an immersive specialization programmed to train in real situations.

This program is designed around Problem Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the academic year. For this purpose, the professional will be assisted by an innovative interactive video system created by renowned and experienced experts in Hair Transplantation.



02 Objectives

The objective of this specialization is to ensure that our students learn in a stimulating and attractive way, so that their interest in studying does not wane while they work. In this way, we give real encouragement to achieving the learning objectives and with them, your professional growth.





“

The aim is to provide you with theoretical and practical knowledge of the anatomy and physiology of hair in men and women at completion of this Postgraduate Certificate in order to be able to intervene in this area"



General Objectives

- Acquisition of knowledge, skills and abilities, both theoretical and practical, to be able to start working as a hair surgeon.
- Acquire diagnostic and treatment skills in cases of patients with alopecia and other hair and scalp problems, as well as to learn clinical-surgical skills, an essential foundation for the acquisition of deeper knowledge in this field.
- Learn the required clinical-surgical skills to solve patients' problems in Hair Transplantation and Hair Medicine



Realistic objectives, which will measure your progress and your advancement as a professional, in a constant and effective way"





Specific Objectives

- ♦ Review and expand knowledge of anatomy and hair physiology, to know in depth both the hair and the dermis and to be able to correctly perform both surgical interventions and the treatment of their pathologies.
- ♦ Acquire in-depth knowledge of the physiology of the skin and the pilosebaceous follicle.
- ♦ Conduct a study of hair growth cycles.
- ♦ Study of keratin and keratinization, as well as melanin and melanogenesis of hair.
- ♦ Study the embryology and anatomy of the hair follicle, the anatomy of the sebaceous gland, the apocrine gland and the erector muscle, as well as their vascularization and innervation.
- ♦ Study the layers of the scalp, and study the hair, its composition, properties, and growth phases.
- ♦ Go through a thorough clinical history, as well as to evaluate in detail both the donor area, which must be adequate, and the recipient area, both key steps for achieving good capillary diagnosis.
- ♦ Learn how to perform a proper photographic study for the clinical history.
- ♦ Learn to observe a photograph with the microcamera, distinguish the different follicular patterns, perifollicular, intrafollicular, and differences in thickness and texture in the hair as a basis for establishing a correct hair diagnosis, and determine the treatment to be performed based on this.
- ♦ Review the history of hair transplantation and medicine over the years, and the evolution and changes in this branch of esthetic medicine, both in diagnosis and surgical techniques.

03

Course Management

This Postgraduate Certificate is the opportunity to learn from the best, with a teaching staff of professionals in the sector who will invest their theoretical and practical knowledge to take you to the highest level of training. With the latest and most effective teaching methods on the online teaching market.





“

The most up-to-date developments in the field of hair transplantation, from leading experts in this type of procedure"

Management



Dr. Pérez Castaño, Cristina Gema

- ◆ Degree in Medicine and Surgery from the Complutense University of Madrid in 2004. Specialist via MIR in Intensive Care Medicine at the Doce de Octubre Hospital in Madrid. Doctoral courses in the field of surgery and infectious diseases with outstanding results. PhD in organ transplantation with asystole donors through a Mutua Madrileña Scholarship, specialized training in medical pathology, infectious diseases, organ transplantation and emergency units worldwide. Homologation of the master's degree in out-of-hospital emergency medicine, accredited by the Laín Entralgo Agency of the Community of Madrid, Spain.
- ◆ Specialist in hair transplantation in clinics such as MC360, MAN MEDICAL INSTITUTE and head of the hair transplant unit at the EIVIESTETIC clinic in Ibiza, collaborating in various hair transplant units in the diagnostic and surgical area and various medical-esthetic treatments.
- ◆ Along with the rest of the MAN MEDICAL INSTITUTE hair surgery medical team in 2019, she received the "Medical Team of the Year 2019" award for the hair surgery branch from the newspaper La Razón "Salud".

Professors

Dr. Rivarola, Cristian

- ◆ Bachelor of Medicine and Surgery, specialist in plastic, reconstructive and major burns surgery, as well as minimally invasive surgery.
- ◆ Training Director at IMS (International Medical School), associated with the UAX (Universidad Alfonso X el Sabio). Outstanding specialist in hair micrografting, FUSS and FUE techniques.
- ◆ International medical training in Argentina, Paraguay, Spain, and Japan.



The faculty in this training program will give you the most realistic and up-to-date view of the field; the contextual point of view you need to learn"



04

Structure and Content

The **Postgraduate Certificate** is structured as a comprehensive tour through each and every one of the concepts required to understand and work in this field. With an approach focused on practical application that will allow you to grow as a professional from the very beginning of this course.





“

A comprehensive syllabus focused on acquiring knowledge and converting it into real skills, created to propel you to excellence”

Module 1. Anatomy and Physiology of Hair

- 1.1. Normal Hair Follicle. Structure.
 - 1.1.1. Parts of the Hair Follicle
 - 1.1.1.1. Upper Part:
 - 1.1.1.1.1. Follicular Ostium
 - 1.1.1.1.2. Infundibulum.
 - 1.1.1.1.3. Isthmus
 - 1.1.1.2. Lower Part:
 - 1.1.1.2.1. Erector Muscle Insertion
 - 1.1.1.2.2. Hair Bulb: Melanocytes and Matrix Cells
 - 1.1.1.2.3. Sebaceous Glands
 - 1.1.2. Histology of the Hair Follicle
 - 1.1.3. Mature Hair Follicle
 - 1.1.3.1. Hair Stem: Medulla, Cortex, and Cuticle
 - 1.1.3.2. Inner Root Sheath: Cuticle, Huxley's Layer and Henle's Layer.
 - 1.1.3.3. Outer Root Sheath:
 - 1.1.3.4. Vitreous Layer
 - 1.1.3.5. Outer Fibrous Layer
 - 1.1.4. Cellular Composition of the Hair Follicle:
 - 1.1.4.1. Stem Cells
 - 1.1.4.2. Keratinocytes
 - 1.1.4.3. Melanocytes
 - 1.1.4.4. Neurones
 - 1.1.4.5. Blood Vessels
 - 1.1.4.6. Mastocytic Cell Precursor Derivatives
 - 1.1.4.7. Immune Cells
 - 1.1.4.8. Neuronal Stem Cells
- 1.2. Histopathological Signs of Non-Scarring Alopecias
 - 1.2.1. Androgenetic Alopecia
 - 1.2.1.1. Hair Follicle Miniaturization
 - 1.2.1.2. Sebaceous Pseudohyperplasia
 - 1.2.2. Telogen Effluvium:
 - 1.2.2.1. Predominance of Hair Follicles in Telogen Phase
 - 1.2.2.2. Absence of Significant Histopathological Changes
 - 1.2.3. Alopecia Areata
 - 1.2.3.1. Peri and Intra Bulbar Lymphocytic Infiltrate (Honeycomb Hyperpigmentation)
 - 1.2.3.2. Several Follicles of the Biopsy in the Same Evolutionary Phase
 - 1.2.3.3. Reversal of the Anagen-Telogen Ratio
- 1.2.4. Syphilitic Alopecia
 - 1.2.4.1. Abundance of Plasma Cells in the Inflammatory Infiltrate
 - 1.2.4.2. Presence of Treponema Pallidum with HI stains
- 1.2.5. Trichotillomania
 - 1.2.5.1. Absence of Peribulbar Inflammatory Infiltrate
 - 1.2.5.2. Trichomalacia
 - 1.2.5.3. Incontinentia Pigmenti
 - 1.2.5.4. Intra and Perifollicular Hemorrhages
- 1.2.6. Traction Alopecia
 - 1.2.6.1. Similar to Trichotillomania
 - 1.2.6.2. Diminution of Terminal Hair Follicles

1.3. Anatomy of the Scalp

- 1.3.1. Scalp Layers (SCALP):
 - 1.3.1.1. Skin
 - 1.3.1.1.1. Epidermis and Dermis
 - 1.3.1.1.1.1. arrector pilifibre muscles smooth muscle fibers innervation of the sympathetic nervous system. Inserted into the hair follicle goose bumps
 - 1.3.1.1.1.2. Thick. Between 3mm (Vertex) to 8mm (Occipital)
 - 1.3.1.1.1.3. Contains:
 - 1.3.1.1.1.3.1. Hair Follicles: Rich Innervation.
 - 1.3.1.1.1.3.2. Sebaceous Glands
 - 1.3.1.1.1.3.3. Sweat Glands
 - 1.3.1.2. Subcutaneous Tissue
 - 1.3.1.2.1. Fat and Fibrous Septa
 - 1.3.1.2.2. Arteries, Veins, Lymphatic Vessels, and Nerves
 - 1.3.1.3. Aponeurosis
 - 1.3.1.3.1. Musculo-Aponeurotic Scalp Layer
 - 1.3.1.3.2. Epicranial Muscle
 - 1.3.1.3.3. Traction Resistance.
 - 1.3.1.4. Lax Subcutaneous Tissue
 - 1.3.1.4.1. Thin
 - 1.3.1.4.2. Avascular/Emitting Veins
 - 1.3.1.4.3. Infections
 - 1.3.1.5. Pericranium/Periosteum

- 1.3.2. Skin Vascularisation:
 - 1.3.2.1. Deep Plexus: Vascular Trunks and Superficial Plexus
 - 1.3.2.2. Subcutaneous Plexus, Cutaneous Plexus, Papillary Plexus, and Capillary Loop.
- 1.4. Types of Hair
 - 1.4.1. Lanugo
 - 1.4.1.1. Fine
 - 1.4.1.2. Non-Vascular
 - 1.4.2. Vellus
 - 1.4.2.1. Diameter and Length (30u/<1cm)
 - 1.4.2.2. Depigmented and Non-Medullated
 - 1.4.2.3. Vellus Hairs
 - 1.4.3. Terminal Hair
 - 1.4.3.1. Diameter and Length (60u/>1cm)
 - 1.4.3.2. Pigmented and Medullated
 - 1.4.4. According to Area of Growth
 - 1.4.4.1. Asexual Hair
 - 1.4.4.2. Ambosexual Hair
 - 1.4.4.3. Sexual Hair
- 1.5. Chemical Composition of Hair
 - 1.5.1. Protein (28%).
 - 1.5.1.1. Keratin: Hard and Soft
 - 1.5.1.2. Aminoacids: Cysteine, Histidine, Methionine, and Tryptophan.
 - 1.5.2. Lipids (2%)
 - 1.5.3. Trace Elements
 - 1.5.4. Water (70%)
 - 1.5.5. Pigments
 - 1.5.6. Others.
- 1.6. Properties of Hair
 - 1.6.1. Permeability: Ability to Absorb Liquids
 - 1.6.1.1. Changes in Length, Diameter, and Shape
 - 1.6.2. Resistance: Ability to Withstand Traction
 - 1.6.2.1. Determined by Its Structure and Chemical Composition
 - 1.6.2.2. Relation to Sulfur
- 1.7. Hair Phases
 - 1.7.1. Anagen Phase
 - 1.7.1.1. 4-6 years
 - 1.7.1.2. Birth and Growth
 - 1.7.2. Catagen Phase
 - 1.7.2.1. 2-3 weeks
 - 1.7.2.2. 1-2% of Hairs
 - 1.7.2.3. Anabolic to Catabolic Transition
 - 1.7.3. Telogen Phase
 - 1.7.3.1. Resting Phase and Hair Shedding
 - 1.7.3.2. 3- 4- months
 - 1.7.3.3. 4-24% of Hairs
 - 1.7.3.4. Increased In: Postpartum (Physiological) and (Pathological) such as Stress and Fever.
- 1.8. Follicular Unit
 - 1.8.1. Definition
 - 1.8.2. Follicular Unit Density (UF/cm²)
 - 1.8.3. Hair Density (Hairs/cm²)
 - 1.8.4. Differences between Races
 - 1.8.4.1. Asian, Black, and White
- 1.9. History of Hair Surgery
 - 1.9.1. Early Beginnings. The Role of Japan in Hair Surgery.
 - 1.9.1.1. Eyebrows and Eyelashes
 - 1.9.2. Beginning of its Development and Practice
 - 1.9.3. The First Hair Transplant
 - 1.9.4. The Evolution of Transplantation
 - 1.9.4.1. The 1960s to the 1970s
 - 1.9.4.2. The 1980s
 - 1.9.4.3. 1984: Dr. John Headington: "Follicular Unit Transplantation"
 - 1.9.5. Evolution of Surgical Techniques.
 - 1.9.5.1. Punch Grafts – Mini Grafts – Micro Grafts
 - 1.9.6. Organisation
 - 1.9.6.1. Scientific Societies
 - 1.9.6.2. Specific Scientific Journals
 - 1.9.6.3. Specific Textbooks

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 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

In a given situation, what would you do? Throughout the program, you will be presented with multiple simulated clinical cases based on real patients, where you will have to investigate, establish hypotheses and, finally, resolve the situation. There is abundant scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time.

With TECH you can experience a way of learning that is shaking the foundations of traditional universities around the world.



According to Dr. Gervas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching potential 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 professional medical 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 grasp concepts, but also develop their mental capacity by evaluating real situations and applying their knowledge.
2. The learning process has a clear focus on 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.

Our 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, which represent a real revolution with respect to simply studying and analyzing cases.



The physician 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.

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 we have trained more than 250,000 physicians with unprecedented success, in all clinical specialties regardless of the surgical load. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

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 (we 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.



In this program you will have access to the best educational material, prepared with you 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.

This content is then adapted in an audiovisual format that will create our way of working online, with the latest techniques that allow us to offer you high quality in all of the material that we provide you with.



Latest Techniques and Procedures on Video

We introduce you to the latest techniques, to the latest educational advances, to the forefront of current medical techniques. All this, in first person, 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

We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This unique multimedia content presentation training system was awarded by Microsoft as a "European Success Story".



Additional Reading

Recent articles, consensus documents, international guides. in our virtual library you will have access to everything you need to complete your training.





Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, we will present you with real case developments in which the expert will guide you through focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.



Testing & Re-testing

We periodically evaluate and re-evaluate your knowledge throughout the program, through assessment and self-assessment activities and exercises: so that you can see how you 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 our future difficult decisions.



Quick Action Guides

We offer you the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help you progress in your learning.



06

Certificate

Through a different and stimulating learning experience, you will be able to acquire the necessary skills to take a big step in your training. An opportunity to progress, with the support and monitoring of a modern and specialized university, which will propel you to another professional level.



“

Postgraduate Certificate in Anatomy and Physiology of the Hair: a highly qualified added value for any medical professional"

This **Postgraduate Certificate in Anatomy and Physiology of the Hair** contains the most complete and up-to-date scientific program on the market.

After the student has passed the evaluations, they will receive by mail with acknowledgment of receipt their corresponding **Postgraduate Certificate Degree** issued by **TECH Technological University**.

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

Title: **Postgraduate Certificate in Anatomy and Physiology of Hair**

ECTS: **6**

Official Number of Hours: **150**



future

health

confidence people

education information tutors

guarantee accreditation teaching

institutions technology learning

community commitment

tech technological university

personalized service innovation

knowledge present

Postgraduate
Certificate
Anatomy and
Physiology of the Hair

online training

development language

virtual classroom

Course Modality: Online
Duration: 2 months.
Certificate: TECH Technological University
6 ECTS Credits
Teaching Hours: 150 hours.

Postgraduate Certificate

Anatomy and Physiology of the Hair

