

# Postgraduate Certificate

## Visual Quality Metrics and Measures





## Postgraduate Certificate

### Visual Quality Metrics and Measures

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Accreditation: 6 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtitute.com/us/medicine/postgraduate-certificate/visual-quality-metrics-measures](http://www.techtitute.com/us/medicine/postgraduate-certificate/visual-quality-metrics-measures)

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# 01

# Introduction

Abnormalities in apparently normal eyes go unnoticed by most people. Many times professionals encounter patients with good visual acuity, but have visual quality complaints, night halos, ghost images, etc., and these phenomena are not due to a refractive defect quantifiable by the classic methods of refraction, but to the fact that the eye is affected by higher order abnormalities. For this reason, the detection, classification and quantification of ocular distortions, as well as their treatment, have become increasingly important, so it is paramount for practitioners to be up to date on them.





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*The latest advances in the area of optical technologies and clinical optometry compiled in a highly efficient Postgraduate Certificate that will optimize your effort with the best results”*

Research is essential for the development of science and, especially, in the health sciences. Optics and Optometry, as a health profession, require continuous research to improve the visual health of the population, applying evidence-based practices. Biostatistics is a fundamental tool for any health professional interested in research or who has a critical spirit towards new procedures and publications.

Continuous training in the latest optometric technologies and treatments is essential in professional updating, preparing to take on jobs that are increasingly integrated into the healthcare system, both public and private.

The Postgraduate Certificate in Visual Quality Metrics and Measures covers the main fields of action for optometrists, always with the maximum update and with a first level teaching staff. The study plan has been designed from the perspective and experience of experts highly specialized in their modules, and immersed in the clinical world, which has led us to know the current and future training challenges.

This training has been clearly and robustly directed to the clinical field, preparing students to develop in this field with extensive theoretical and practical knowledge in optometry.

Students will follow modules, each of them structured in 10 topics. Each topic consists of a theoretical introduction, explanations by the professor, activities, etc., in such a way that learning becomes an enjoyable journey to high-level knowledge in Optical Instrumentation and Clinical Optometry.

In conclusion, this Postgraduate Certificate provides professionals with the theoretical and clinical knowledge necessary to address any of the specialties within Optics and Optometry, as well as opening the door to clinical research.

This **Postgraduate Certificate in Visual Quality Metrics and Measures** is the most comprehensive and up-to-date educational program on the market. The most important features of the program include:

- ♦ More than 100 clinical cases presented by experts in the different specialties.
- ♦ The graphic, schematic, and eminently practical contents with which they are created provide scientific and practical information on the disciplines that are essential for professional practice.
- ♦ The latest developments in Visual Quality Metrics and Measures.
- ♦ The presentation of hands-on workshops on procedures, diagnostic and therapeutic techniques.
- ♦ An algorithm-based interactive learning system for decision-making in the clinical situations presented throughout the course.
- ♦ 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.



*This Postgraduate Certificate in Visual Quality Metrics and Measures will help you keep up to date to provide comprehensive quality care to patients”*

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*This Postgraduate Certificate is the best investment you can make in selecting a refresher program to update your knowledge of Visual Quality Metrics and Measures”*

The teaching staff is made up of professionals belonging to the field of Visual Quality Metrics and Measures, who bring to this training the experience of their work, as well as recognized specialists from reference 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 an immersive training experience designed to train for real-life situations.

This program is designed around Problem Based Learning, where the medical professional must try to solve the different professional practice situations that arise during the course. For this purpose, the specialist will be assisted by an innovative interactive video system created by renowned and experienced experts in treating patients in children with extensive experience.

*All the necessary methodology for non-specialist medical professionals in the field of clinical optometry, in a specific and concrete Postgraduate Certificate.*

*We have the best didactic material, an innovative methodology and a 100% online training, which will facilitate your study.*



02

# Objectives

This Postgraduate Certificate is designed to achieve an effective update of physician knowledge, in order to provide quality care based on the latest scientific evidence that guarantees pediatric patient safety.







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*If you are looking for success in your profession, we can help you achieve it. We offer you the most complete training on Optical Technologies and Clinical Optometry”*



## General Objective

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- Acquire the necessary knowledge to be able to evaluate a clinical case, detect possible aberrations present, study whether they are within the normal range, and propose a treatment

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*An opportunity created for professionals who are looking for an intensive and effective course with which to take a significant step in their profession”*





## Specific Objectives

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- ◆ Deepen the principles of aberrometry
- ◆ Present the concept of a perfect optical system
- ◆ Understand the impossibility of an eye without aberrations
- ◆ Manage the classification of optical aberrations
- ◆ Describe the distribution of aberrations present in the normal eye
- ◆ Differentiate between the different types of optical aberrations
- ◆ In-depth knowledge of the main metrics used to evaluate visual quality
- ◆ Know the ocular optical surfaces susceptible to aberrations
- ◆ Differentiate between external and internal ocular aberrations
- ◆ Specialize in the aberrations present in corneal ocular pathology
- ◆ In-depth knowledge of the types of aberrations induced by corneal and intraocular refractive surgery
- ◆ Describe the instruments for measuring aberrations
- ◆ Present treatment strategies for ocular aberrations



03

# Course Management

For our course to be of the highest quality, we are proud to work with a teaching staff of the highest level, chosen for their proven track record. 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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*Leading professionals in the field have come together to teach you the latest advances in Pediatric Orthopedics”*

## Management



### Dr. Calvache Anaya, José Antonio

- ♦ Doctor in Optometry and Vision Sciences
- ♦ Postgraduate Diploma in Statistics Applied to Health Sciences
- ♦ Optometrist at Clínica Baviera in Palma de Mallorca



04

# Structure and Content

The content structure has been designed by a team of professionals who recognize the implications of training in medical practice in Visual Quality Metrics and Measures, who are aware of the current relevance of specialization to be able to treat pediatric patients with urgent pathology, and committed to quality teaching through new educational technologies.





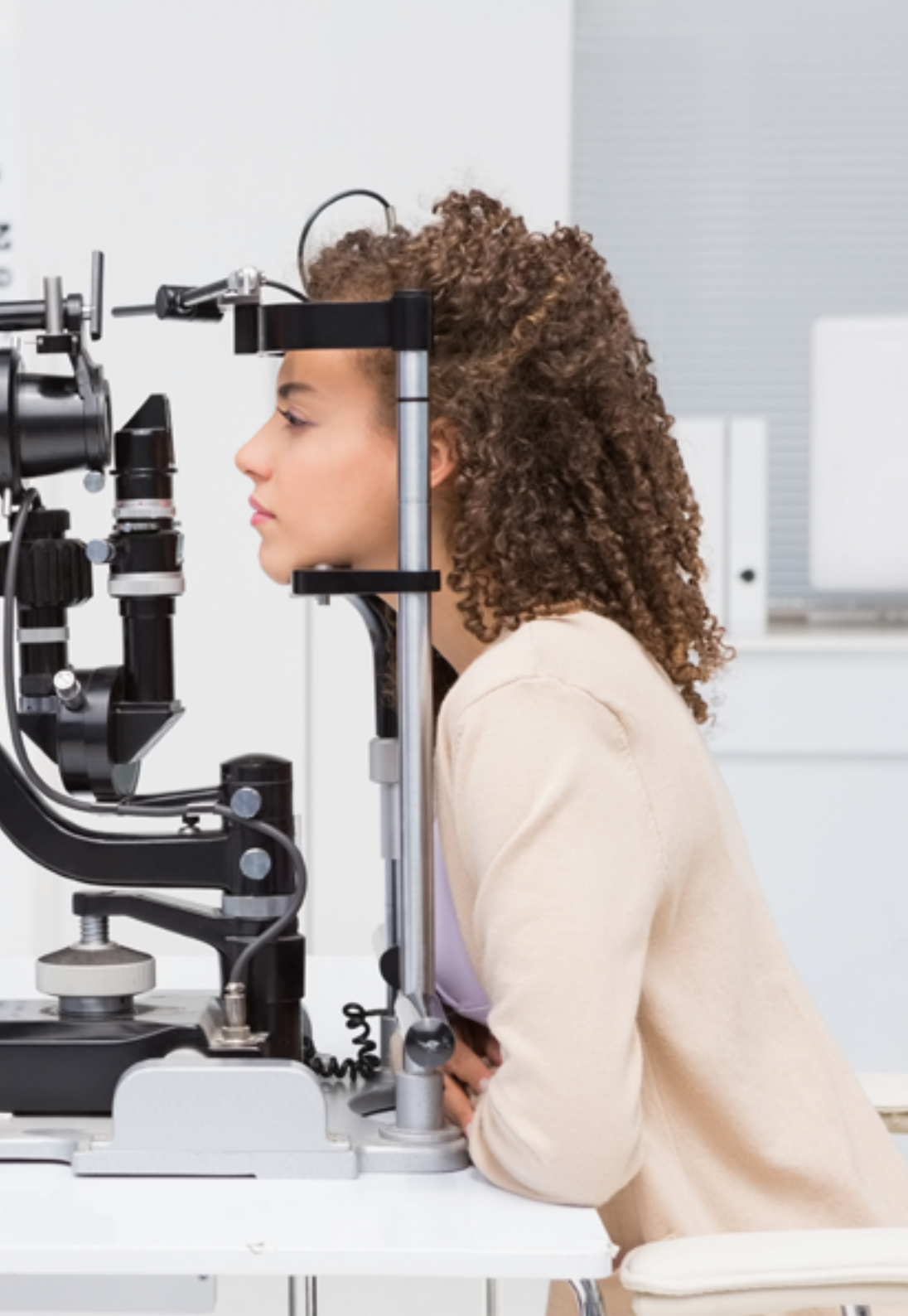
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*This Postgraduate Certificate in Visual Quality Metrics and Measures will help you keep up to date to provide comprehensive quality care to patients”*

## Module 1. Metrics and Measures of Visual Quality

- 1.1. Principles of Aberrometry
  - 1.1.1. Wavefront
    - 1.1.1.1. Perfect Wavefront
    - 1.1.1.2. Aberrated Wavefront
  - 1.1.2. Perfect Optical System and Diffraction
    - 1.1.2.1. Diffraction Rings
  - 1.1.3. Classification of Optical Aberrations
    - 1.1.3.1. High Order
    - 1.1.3.2. Low Order
  - 1.1.4. Decomposition into Zernike Polynomials
    - 1.1.4.1. Zernike Coefficients
    - 1.1.4.2. Normal Values
- 1.2. Clinically Significant Optical Aberrations
  - 1.2.1. Spherical aberration
    - 1.2.1.1. Optical Foundation
    - 1.2.1.2. Positive Spherical Aberration
    - 1.2.1.3. Negative Spherical Aberration
    - 1.2.1.4. Normal Values
  - 1.2.2. Coma.
    - 1.2.2.1. Normal Values
- 1.3. Metrics for Measuring Visual Quality
  - 1.3.1. Zernike Coefficients
  - 1.3.2. Strehl's Ratio
  - 1.3.3. CSF and MTF
  - 1.3.4. RMS
- 1.4. External Ocular Aberrations
  - 1.4.1. Corneal Geometry
  - 1.4.2. Asphericity
    - 1.4.2.1. Asphericity Coefficients
    - 1.4.2.2. Aspherical and Spherical Aberration
  - 1.4.3. Normal Distribution of Corneal Aberrations
    - 1.4.3.1. Normal Eye Asphericity
    - 1.4.3.2. Normal Eye Coma





- 1.5. Internal Ocular Aberrations
  - 1.5.1. Lens.
  - 1.5.2. Methods
- 1.6. Aberrations in Irregular Corneas
  - 1.6.1. Keratoconus
  - 1.6.2. Corneal Ectasia
- 1.7. Induced Aberrometric Changes on the Cornea
  - 1.7.1. Orthokeratology
    - 1.7.1.1. Focused Treatment Case
    - 1.7.1.2. Off-Center Treatment Case
  - 1.7.2. Aberrometric Changes Induced by Corneal Refractive Surgery
    - 1.7.2.1. Myopia Surgery
    - 1.7.2.2. Hyperopia Surgery
    - 1.7.2.3. Off-Center Ablations
- 1.8. Aberrometric Changes Induced by Crystalline Lens Surgery and Intraocular Lens Implants
  - 1.8.1. Intraocular Lens Aberrations
  - 1.8.2. Asphericity and Aberrations in the Pseudophakic Eye
- 1.9. Instruments for Measuring Visual Quality
  - 1.9.1. Surveyors
  - 1.9.2. Hartman-Shack Aberrometry
- 1.10. Compensating Ocular Aberrations
  - 1.10.1. Contact Lenses
  - 1.10.2. Corneal Topography Guided Laser Ablation



# 05

# Study Methodology

TECH is the world's first university to combine the **case study** methodology with **Relearning**, a 100% online learning system based on guided repetition.

This disruptive pedagogical strategy has been conceived to offer professionals the opportunity to update their knowledge and develop their skills in an intensive and rigorous way. A learning model that places students at the center of the educational process giving them the leading role, adapting to their needs and leaving aside more conventional methodologies.





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*TECH will prepare you to face new challenges in uncertain environments and achieve success in your career”*

## The student: the priority of all TECH programs

In TECH's study methodology, the student is the main protagonist.

The teaching tools of each program have been selected taking into account the demands of time, availability and academic rigor that, today, not only students demand but also the most competitive positions in the market.

With TECH's asynchronous educational model, it is students who choose the time they dedicate to study, how they decide to establish their routines, and all this from the comfort of the electronic device of their choice. The student will not have to participate in live classes, which in many cases they will not be able to attend. The learning activities will be done when it is convenient for them. They can always decide when and from where they want to study.

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*At TECH you will NOT have live classes  
(which you might not be able to attend)”*



### The most comprehensive study plans at the international level

TECH is distinguished by offering the most complete academic itineraries on the university scene. This comprehensiveness is achieved through the creation of syllabi that not only cover the essential knowledge, but also the most recent innovations in each area.

By being constantly up to date, these programs allow students to keep up with market changes and acquire the skills most valued by employers. In this way, those who complete their studies at TECH receive a comprehensive education that provides them with a notable competitive advantage to further their careers.

And what's more, they will be able to do so from any device, pc, tablet or smartphone.

“*TECH's model is asynchronous, so it allows you to study with your pc, tablet or your smartphone wherever you want, whenever you want and for as long as you want*”

## Case Studies and Case Method

The case method has been the learning system most used by the world's best business schools. Developed in 1912 so that law students would not only learn the law based on theoretical content, its function was also to present them with real complex situations. In this way, they could make informed decisions and value judgments about how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

With this teaching model, it is students themselves who build their professional competence through strategies such as Learning by Doing or Design Thinking, used by other renowned institutions such as Yale or Stanford.

This action-oriented method will be applied throughout the entire academic itinerary that the student undertakes with TECH. Students will be confronted with multiple real-life situations and will have to integrate knowledge, research, discuss and defend their ideas and decisions. All this with the premise of answering the question of how they would act when facing specific events of complexity in their daily work.





## Relearning Methodology

At TECH, case studies are enhanced with the best 100% online teaching method: Relearning.

This method breaks with traditional teaching techniques to put the student at the center of the equation, providing the best content in different formats. In this way, it manages to review and reiterate the key concepts of each subject and learn to apply them in a real context.

In the same line, and according to multiple scientific researches, reiteration is the best way to learn. For this reason, TECH offers between 8 and 16 repetitions of each key concept within the same lesson, presented in a different way, with the objective of ensuring that the knowledge is completely consolidated during the study process.

*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.*



## A 100% online Virtual Campus with the best teaching resources

In order to apply its methodology effectively, TECH focuses on providing graduates with teaching materials in different formats: texts, interactive videos, illustrations and knowledge maps, among others. All of them are designed by qualified teachers who focus their work on combining real cases with the resolution of complex situations through simulation, the study of contexts applied to each professional career and learning based on repetition, through audios, presentations, animations, images, etc.

The latest scientific evidence in the field of Neuroscience points to the importance of taking into account the place and context where the content is accessed before starting a new learning process. Being able to adjust these variables in a personalized way helps people to remember and store knowledge in the hippocampus to retain it in the long term. This is a model called Neurocognitive context-dependent e-learning that is consciously applied in this university qualification.

In order to facilitate tutor-student contact as much as possible, you will have a wide range of communication possibilities, both in real time and delayed (internal messaging, telephone answering service, email contact with the technical secretary, chat and videoconferences).

Likewise, this very complete Virtual Campus will allow TECH students to organize their study schedules according to their personal availability or work obligations. In this way, they will have global control of the academic content and teaching tools, based on their fast-paced professional update.



*The online study mode of this program will allow you to organize your time and learning pace, adapting it to your schedule”*

### 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.

## The university methodology top-rated by its students

The results of this innovative teaching model can be seen in the overall satisfaction levels of TECH graduates.

The students' assessment of the teaching quality, the quality of the materials, the structure of the program and its objectives is excellent. Not surprisingly, the institution became the top-rated university by its students according to the global score index, obtaining a 4.9 out of 5.

*Access the study contents from any device with an Internet connection (computer, tablet, smartphone) thanks to the fact that TECH is at the forefront of technology and teaching.*

*You will be able to learn with the advantages that come with having access to simulated learning environments and the learning by observation approach, that is, Learning from an expert.*



As such, the best educational materials, thoroughly prepared, will be available in this program:



#### 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.



#### Practicing Skills and Abilities

You will carry out activities to develop specific competencies and skills in each thematic field. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop within the framework of the globalization we live in.



#### 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 exclusive educational system for presenting multimedia content 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 education.







**Case Studies**

Students will complete a selection of the best case studies in the field. Cases that are presented, analyzed, and supervised by the best specialists in the world.



**Testing & Retesting**

We periodically assess and re-assess your knowledge throughout the program. We do this on 3 of the 4 levels of Miller's Pyramid.



**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 for 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.



# 06 Certificate

The Postgraduate Certificate in Visual Quality Metrics and Measures guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.



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*Include in your qualifications a Postgraduate Certificate in Visual Quality Metrics and Measures: A highly qualified added value for any medical professional”*

This private qualification will allow you to obtain a **Postgraduate Certificate in Visual Quality Metrics and Measures** 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** private qualification 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: **Postgraduate Certificate in Visual Quality Metrics and Measures**

Modality: **online**

Duration: **6 Weeks**

Accreditation: **6 ECTS**





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

**tech** global  
university

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