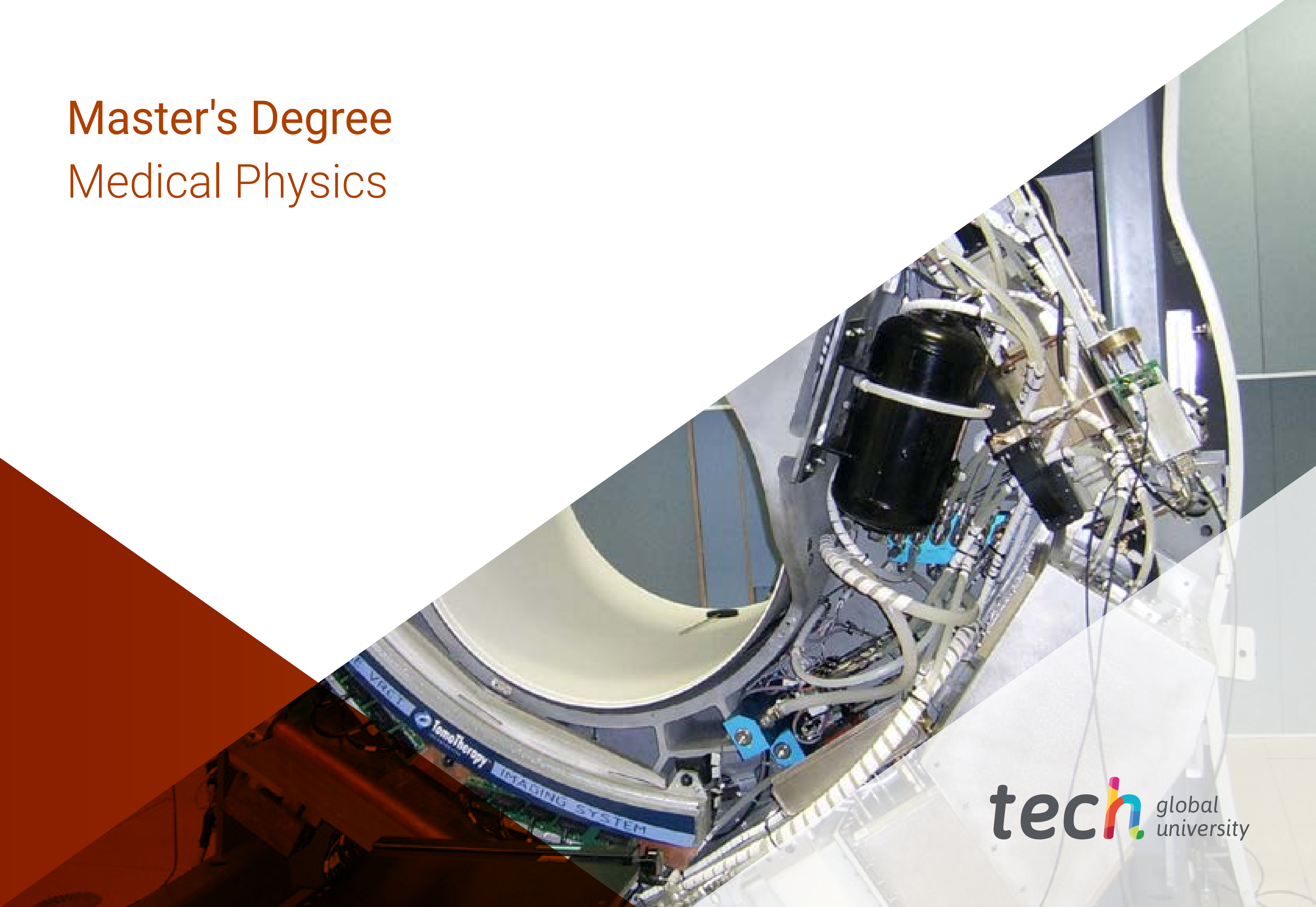
Master's Degree
Medical Physics



tech global university

Master's Degree
Medical Physics

- Modality: **online**
- Duration: **12 months.**
- Certificate: **TECH Global University**
- Accreditation: **60 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Website: **www.techtitute.com/us/engineering/master/master-medical-physics**

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01

Introduction to the Program

Scientific and technological advances in recent decades have driven the prevention, diagnosis, and treatment of diseases through medical physics. This essential knowledge for human well-being requires highly qualified professionals capable of analyzing environmental radiological quality or refining therapies such as proton radiation therapy. According to the World Health Organization, more than 50% of cancer patients require radiotherapy at some point. In this context, this academic institution presents a 100% online program that allows for in-depth study of modern physics, biophysics, or remote sensing and image processing. All of this is supported by innovative multimedia content available 24 hours a day from any device with an internet connection.

Delve into the principles of the Carnot cycle and the Diesel cycle, which are fundamental to modern energy efficiency"

Undoubtedly, technological advances have made it possible to transfer the knowledge and concepts of physics to reality. The contribution of engineering, in this sense, has been key to the current availability of devices that, in the healthcare field, facilitate the prevention, detection and treatment of certain diseases.

Therefore, significant progress has been made in radiation treatments (radiography, tomography, gammagraphy), equipment or the design of the facilities to be able to apply these therapies. Likewise, scientific groups have managed to go beyond a hospital center, to promote the modeling and development of vaccines or the creation of new drugs. Undoubtedly, the contribution of engineering professionals is a determining factor in achieving progress in this field. That is why TECH has designed this 100% online program, where the graduate will be able to obtain a solid learning about Medical Physics.

To this end, this academic institution provides the most innovative pedagogical tools. Thanks to them, students will be able to learn in a much more dynamic way about biophysics, the key concepts of optics or advanced thermodynamics. In addition, through a theoretical-practical approach, the professional will learn about remote sensing and image processing, the most commonly used computer programs and modern physics.

A university education taught exclusively online, without classes with fixed schedules and which the professional can access whenever and wherever they wish. All you need is an electronic device (computer, tablet or cell phone) with an Internet connection to view all the curriculum on the Virtual Campus. In addition, students have the freedom to distribute the teaching load according to their needs.

This **Master's Degree in Medical Physics** contains the most complete and up-to-date university program on the market. Its most notable features are:

- The development of practical cases presented by experts in medical physics
- 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

Master the analysis of atmospheric pollutants, acid rain, and transboundary pollution through a scientific and applied approach"

You will have access to video summaries for each topic, in-depth videos, and essential readings through which you will acquire the most advanced knowledge in medical physics"

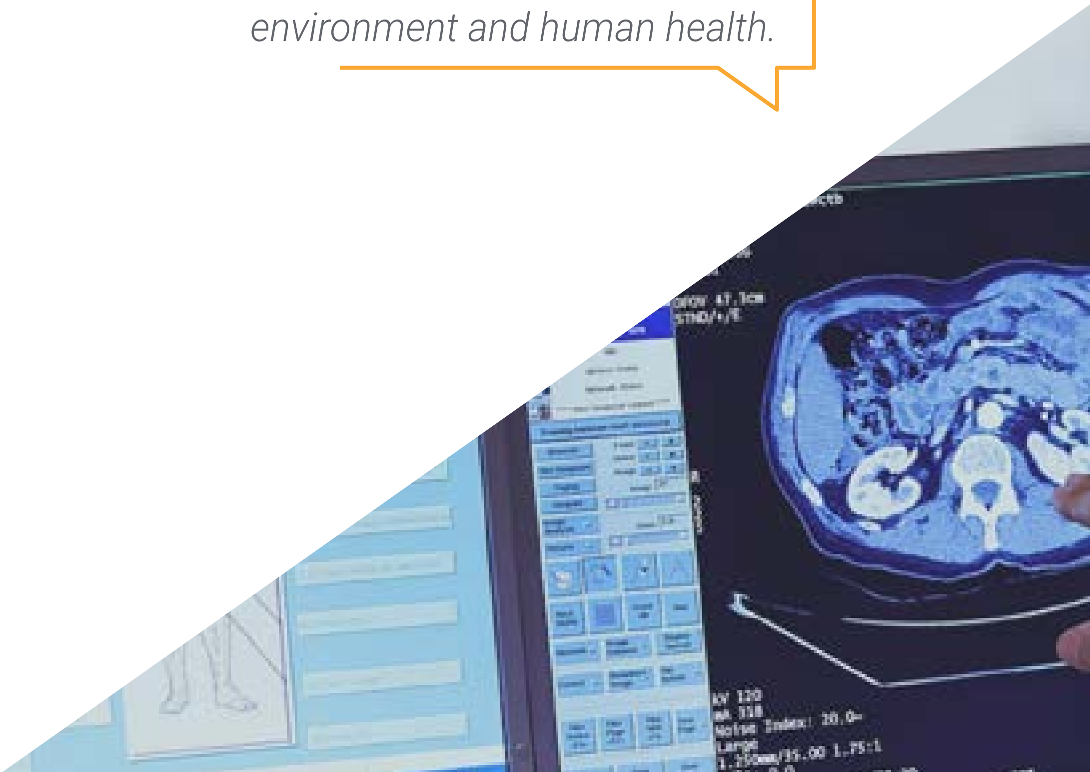
Enroll now in a 100% online Master's Degree that allows you to balance your professional responsibilities with high-quality education.

Gain an in-depth understanding of water and soil chemistry in order to assess their impact on the environment and human health.

Its teaching staff includes professionals from the field of medical physics, who contribute to this program the experience gained through their work, 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 an immersive learning experience designed to prepare for real-life situations.

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



02

Why Study at TECH?

TECH is the world's largest online university. With an impressive catalog of more than 14,000 university programs, available in 11 languages, it is positioned as a leader in employability, with a 99% job placement rate. In addition, it has a huge faculty of more than 6,000 professors of the highest international prestige.

Study at the largest online university in the world and ensure your professional success. The future begins at TECH”

The world's best online university, according to FORBES

The prestigious Forbes magazine, specialized in business and finance, has highlighted TECH Euromed University as "the best online university in the world" This is what they have recently stated in an article in their digital edition in which they echo the success story of this institution, "thanks to the academic offer it provides, the selection of its teaching staff, and an innovative learning method oriented to form the professionals of the future".

The best top international faculty

TECH Euromed University's faculty is made up of more than 6,000 professors of the highest international prestige. Professors, researchers and top executives of multinational companies, including Isaiah Covington, performance coach of the Boston Celtics; Magda Romanska, principal investigator at Harvard MetaLAB; Ignacio Wistumba, chairman of the department of translational molecular pathology at MD Anderson Cancer Center; and D.W. Pine, creative director of TIME magazine, among others.

The world's largest online university

TECH Euromed University is the world's largest online university. We are the largest educational institution, with the best and widest digital educational catalog, one hundred percent online and covering most areas of knowledge. We offer the largest selection of our own degrees and accredited online undergraduate and postgraduate degrees. In total, more than 14,000 university programs, in ten different languages, making us the largest educational institution in the world.

The most complete syllabuses on the university scene

TECH Euromed University offers the most complete syllabuses on the university scene, with programs that cover fundamental concepts and, at the same time, the main scientific advances in their specific scientific areas. In addition, these programs are continuously updated to guarantee students the academic vanguard and the most demanded professional skills. and the most in-demand professional competencies. In this way, the university's qualifications provide its graduates with a significant advantage to propel their careers to success.

A unique learning method

TECH Euromed University is the first university to use Relearning in all its programs. This is the best online learning methodology, accredited with international teaching quality certifications, provided by prestigious educational agencies. In addition, this innovative academic model is complemented by the "Case Method", thereby configuring a unique online teaching strategy. Innovative teaching resources are also implemented, including detailed videos, infographics and interactive summaries.

The official online university of the NBA

TECH Euromed University is the official online university of the NBA. Thanks to our agreement with the biggest league in basketball, we offer our students exclusive university programs, as well as a wide variety of educational resources focused on the business of the league and other areas of the sports industry. Each program is made up of a uniquely designed syllabus and features exceptional guest hosts: professionals with a distinguished sports background who will offer their expertise on the most relevant topics.

Leaders in employability

TECH Euromed University has become the leading university in employability. Ninety-nine percent of its students obtain jobs in the academic field they have studied within one year of completing any of the university's programs. A similar number achieve immediate career enhancement. All this thanks to a study methodology that bases its effectiveness on the acquisition of practical skills, which are absolutely necessary for professional development.

Google Premier Partner

The American technology giant has awarded TECH Euromed University the Google Premier Partner badge. This award, which is only available to 3% of the world's companies, highlights the efficient, flexible and tailored experience that this university provides to students. The recognition not only accredits the maximum rigor, performance and investment in TECH Euromed University's digital infrastructures, but also places this university as one of the world's leading technology companies.

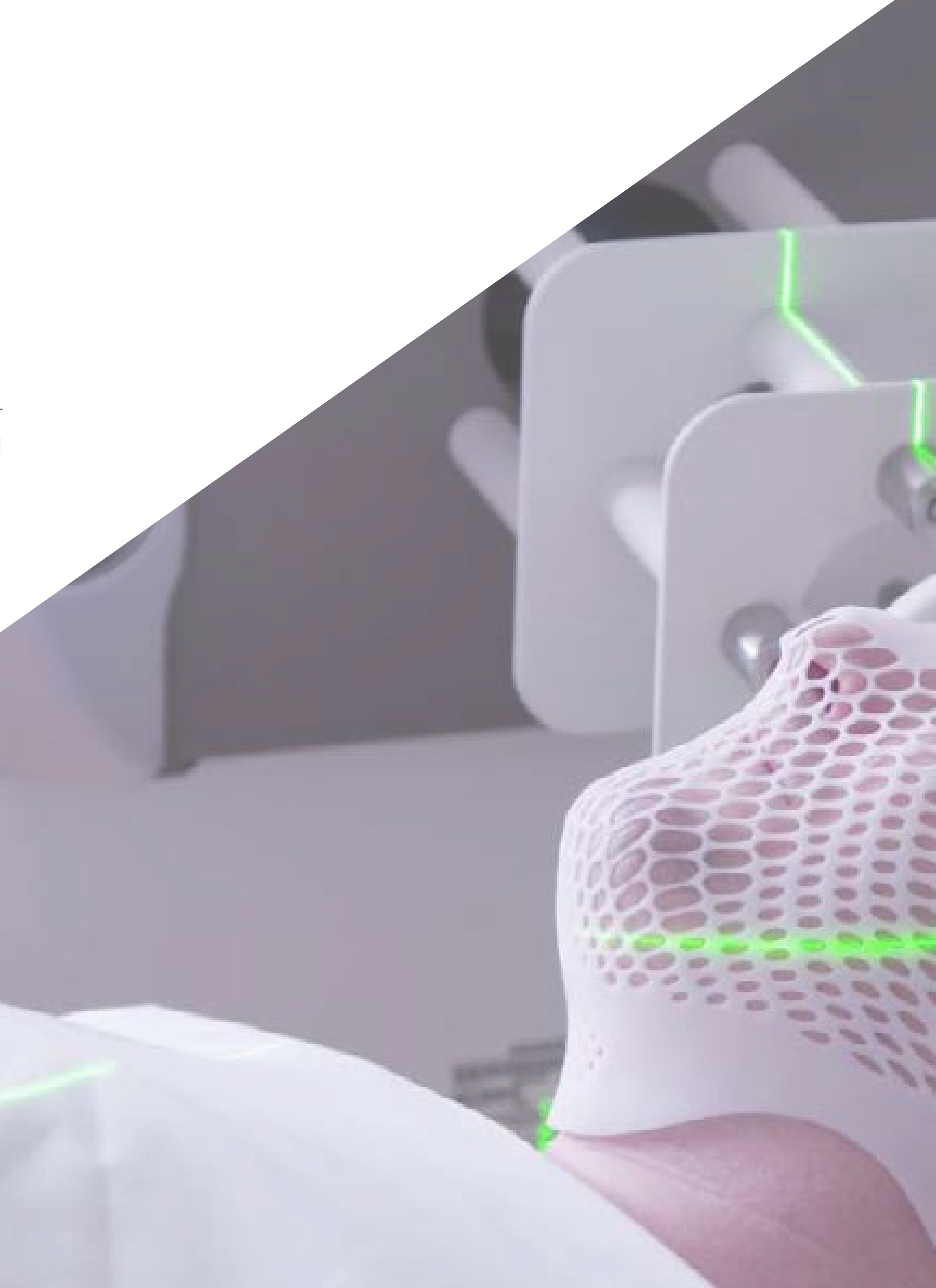
The top-rated university by its students

Students have positioned TECH Euromed University as the world's top-rated university on the main review websites, with a highest rating of 4.9 out of 5, obtained from more than 1,000 reviews. These results consolidate TECH Euromed University as the benchmark university institution at an international level, reflecting the excellence and positive impact of its educational model.

03

Syllabus

The effectiveness of the Relearning system, based on content repetition, has led TECH to implement it across all its degree programs, allowing students to progress through the syllabus efficiently while reducing long hours of study. In this way, students will address key topics such as the physics of ionizing radiation, applied biophysics, nuclear and particle physics, as well as medical imaging, dosimetry, radiological protection, and detection technologies. In addition, they will explore the use of specialized software in remote sensing and image processing. All of this is complemented by video summaries, in-depth videos, and specialized readings.



A syllabus that will take you through twelve months of the most advanced and current knowledge on Medical Physics"

Module 1. Chemistry

1.1. Matter Structure and Chemical Bonding
- 1.1.1. Matter
- 1.1.2. The Atom
- 1.1.3. Types of Chemical Bonds

1.2. Gases, Liquids and Solutions
- 1.2.1. Gases
- 1.2.2. Liquids
- 1.2.3. Types of Solutions

1.3. Thermodynamics
- 1.3.1. Introduction to Thermodynamics
- 1.3.2. First Principle of Thermodynamics
- 1.3.3. Second Principle of Thermodynamics

1.4. Acid-Base
- 1.4.1. Concepts of Acidity and Basicity
- 1.4.2. pH
- 1.4.3. pOH

1.5. Solubility and Precipitation
- 1.5.1. Solubility Equilibrium
- 1.5.2. Floccules
- 1.5.3. Colloids

1.6. Oxidation-Reduction Reaction
- 1.6.1. Redox Potential
- 1.6.2. Introduction to Batteries
- 1.6.3. Electrolytic Tank

1.7. Carbon Chemistry
- 1.7.1. Introduction
- 1.7.2. Carbon Cycle
- 1.7.3. Organic Formulation

1.8. Energy and Environment
- 1.8.1. Battery Continuation
- 1.8.2. Carnot Cycle
- 1.8.3. Diesel Cycle

1.9. Atmospheric Chemistry
- 1.9.1. Main Atmospheric Pollutants
- 1.9.2. Acid Rain
- 1.9.3. Transboundary Pollution

1.10. Soil and Water Chemistry
- 1.10.1. Introduction
- 1.10.2. Water Chemistry
- 1.10.3. Soil Chemistry

Module 2. Introduction to Modern Physics

2.1. Introduction to Medical Physics
- 2.1.1. How to Apply Physics to Medicine
- 2.1.2. Energy of Charged Particles in Tissues
- 2.1.3. Photons through Tissues
- 2.1.4. Applications

2.2. Introduction to Particle Physics
- 2.2.1. Introduction and Objectives
- 2.2.2. Quantified Particles
- 2.2.3. Fundamental Forces and Charges
- 2.2.4. Particle Detection
- 2.2.5. Classification of Fundamental Particles and Standard Model
- 2.2.6. Beyond the Standard Model
- 2.2.7. Current Generalization Theories
- 2.2.8. High Energy Experiments

2.3. Particle Accelerators
- 2.3.1. Particle Acceleration Processes
- 2.3.2. Linear Accelerators
- 2.3.3. Cyclotrons
- 2.3.4. Synchrotrons

2.4. Introduction to Nuclear Physics
- 2.4.1. Nuclear Stability
- 2.4.2. New Methods in Nuclear Fission
- 2.4.3. Nuclear Fusion
- 2.4.4. Synthesis of Superheavy Elements

- 2.5. Introduction to Astrophysics
    - 2.5.1. The Solar System
    - 2.5.2. Birth and Death of a Star
    - 2.5.3. Space Exploration
    - 2.5.4. Exoplanets
- 2.6. Introduction to Cosmology
    - 2.6.1. Distance Calculation in Astronomy
    - 2.6.2. Velocity Calculations in Astronomy
    - 2.6.3. Dark Matter and Energy
    - 2.6.4. The Expansion of the Universe
    - 2.6.5. Gravitational Waves
- 2.7. Geophysics and Atmospheric Physics
    - 2.7.1. Geophysics
    - 2.7.2. Atmospheric Physics
    - 2.7.3. Meteorology
    - 2.7.4. Climate Change
- 2.8. Introduction to Condensed Matter Physics
    - 2.8.1. Aggregate States of Matter
    - 2.8.2. Matter Allotropes
    - 2.8.3. Crystalline Solids
    - 2.8.4. Soft Matter
- 2.9. Introduction to Quantum Computing
    - 2.9.1. Introduction to the Quantum World
    - 2.9.2. Qubits
    - 2.9.3. Multiple Qubits
    - 2.9.4. Logic Gates
    - 2.9.5. Quantum Programs
    - 2.9.6. Quantum Computers
- 2.10. Introduction to Quantum Cryptography
    - 2.10.1. Classic Information
    - 2.10.2. Quantum Information
    - 2.10.3. Quantum Encryption
    - 2.10.4. Protocols in Quantum Cryptography

Module 3. Optics

- 3.1. Waves: Introduction
    - 3.1.1. Wave Motion Equation
    - 3.1.2. Plane Waves
    - 3.1.3. Spherical Waves
    - 3.1.4. Harmonic Solution of the Wave Equation
    - 3.1.5. Fourier Analysis
- 3.2. Wavelet Superposition
    - 3.2.1. Superposition of Waves of the Same Frequency
    - 3.2.2. Superposition of Waves of Different Frequency
    - 3.2.3. Phase Velocity and Group Velocity
    - 3.2.4. Superposition of Waves with Perpendicular Electric Vectors
- 3.3. Electromagnetic Theory of Light
    - 3.3.1. Maxwell's Macroscopic Equations
    - 3.3.2. The Material Response
    - 3.3.3. Energy Relations
    - 3.3.4. Electromagnetic Waves
    - 3.3.5. Homogeneous and Isotropic Linear Medium
    - 3.3.6. Transversality of Plane Waves
    - 3.3.7. Energy Transport
- 3.4. Isotropic Media
    - 3.4.1. Reflection and Refraction in Dielectrics
    - 3.4.2. Fresnel Formulas
    - 3.4.3. Dielectric Media
    - 3.4.4. Induced Polarization
    - 3.4.5. Classical Lorentz Dipole Model
    - 3.4.6. Propagation and Diffusion of a Light Beam
- 3.5. Geometric Optics
    - 3.5.1. Paraxial Approximation
    - 3.5.2. Fermat's Principle
    - 3.5.3. Trajectory Equation
    - 3.5.4. Propagation in Non-Uniform Media

3.6. Image Formation
- 3.6.1. Image Formation in Geometrical Optics
- 3.6.2. Paraxial Optics
- 3.6.3. Abbe's Invariant
- 3.6.4. Increases
- 3.6.5. Centered Systems
- 3.6.6. Focuses and Focal Planes
- 3.6.7. Planes and Main Points
- 3.6.8. Thin Lenses
- 3.6.9. System Coupling

3.7. Optical Instruments
- 3.7.1. The Human Eye
- 3.7.2. Photographic and Projection Instruments
- 3.7.3. Telescopes
- 3.7.4. Near Vision Instruments:: Compound Magnifier and Microscope

3.8. Anisotropic Media
- 3.8.1. Polarization
- 3.8.2. Electrical Susceptibility. Index Ellipsoid
- 3.8.3. Wave Equation in Anisotropic Media
- 3.8.4. Propagation Conditions
- 3.8.5. Refraction in Anisotropic Media
- 3.8.6. Fresnel Construction
- 3.8.7. Construction with the Index Ellipsoid
- 3.8.8. Retarders
- 3.8.9. Absorbent Anisotropic Media

3.9. Interference
- 3.9.1. General Principles and Interference Conditions
- 3.9.2. Wavefront Split Interference
- 3.9.3. Young's Stripes
- 3.9.4. Amplitude Division Interferences
- 3.9.5. Michelson's Interferometer
- 3.9.6. Interference of Multiple Beams Obtained by Amplitude Division
- 3.9.7. Fabry-Perot's Interferometer

3.10. Diffraction
- 3.10.1. The Huygens-Fresnel Principle
- 3.10.2. Fresnel and Fraunhofer Diffraction
- 3.10.3. Fraunhofer's Diffraction through an Aperture
- 3.10.4. Limitation of the Resolutive Power of the Instruments
- 3.10.5. Fraunhofer Diffraction by Various Apertures
- 3.10.6. Double Slit
- 3.10.7. Diffraction Grating
- 3.10.8. Introduction to Kirchhoff's Scalar Theory

Module 4. Thermodynamics

4.1. Mathematical Tools: Review
- 4.1.1. Review of the Logarithm and Exponential Functions
- 4.1.2. Review of Derivatives
- 4.1.3. Integrals
- 4.1.4. Derivative of a Function of Several Variables

4.2. Calorimetry. Zero Principle in Thermodynamics
- 4.2.1. Introduction and General Concepts
- 4.2.2. Thermodynamic Systems
- 4.2.3. Zero Principle in Thermodynamics
- 4.2.4. Temperature Scales. Absolute Temperature
- 4.2.5. Reversible and Irreversible Processes
- 4.2.6. Sign Criteria
- 4.2.7. Specific Heat
- 4.2.8. Molar Heat
- 4.2.9. Phase Changes
- 4.2.10 Thermodynamic Coefficients

4.3. Thermodynamic Work. First Principle of Thermodynamics
- 4.3.1. Heat and Thermodynamic Work
- 4.3.2. State Functions and Internal Energy
- 4.3.3. First Principle of Thermodynamics
- 4.3.4. Work of a Gas System
- 4.3.5. Joule's Law
- 4.3.6. Heat of Reaction and Enthalpy

4.4. Ideal Gases
- 4.4.1. Ideal Gas Laws
  - 4.4.1.1. Boyle-Mariotte's Law
  - 4.4.1.2. Charles and Gay-Lussac's Laws
  - 4.4.1.3. Equation of State of Ideal Gases
    - 4.4.1.3.1. Dalton's Law
    - 4.4.1.3.2. Mayer's Law
- 4.4.2. Calorimetric Equations of the Ideal Gas
- 4.4.3. Adiabatic Processes
  - 4.4.3.1. Adiabatic Transformations of an Ideal Gas
    - 4.4.3.1.1. Relationship between Isotherms and Adiabatics
    - 4.4.3.1.2. Work in Adiabatic Processes
- 4.4.4. Polytropic Transformations

4.5. Real Gases
- 4.5.1. Motivation
- 4.5.2. Ideal and Real Gases
- 4.5.3. Description of Real Gases
- 4.5.4. Equations of State of Series Development
- 4.5.5. Van der Waals Equation and Series Development
- 4.5.6. Andrews Isotherms
- 4.5.7. Metastable States
- 4.5.8. Van der Waals Equation: Consequences

4.6. Entropy
- 4.6.1. Introduction and Objectives
- 4.6.2. Entropy: Definition and Units
- 4.6.3. Entropy of an Ideal Gas
- 4.6.4. Entropic Diagram
- 4.6.5. Clausius Inequality
- 4.6.6. Fundamental Equation of Thermodynamics
- 4.6.7. Carathéodory's Theorem

4.7. Second Principle of Thermodynamics
- 4.7.1. Second Principle of Thermodynamics
- 4.7.2. Transformations between Two Thermal Focuses
- 4.7.3. Carnot Cycle
- 4.7.4. Real Thermal Machines
- 4.7.5. Clausius Theorem

4.8. Thermodynamic Functions. Third Principle of Thermodynamics
- 4.8.1. Thermodynamic Functions
- 4.8.2. Thermodynamic Equilibrium Conditions
- 4.8.3. Maxwell's Equations
- 4.8.4. Thermodynamic Equation of State
- 4.8.5. Internal Energy of a Gas
- 4.8.6. Adiabatic Transformations in a Real Gas
- 4.8.7. Third Principle of Thermodynamics and Consequences

4.9. Kinetic-Molecular Theory of Gases
- 4.9.1. Hypothesis of the Kinetic-Molecular Theory
- 4.9.2. Kinetic Theory of the Pressure of a Gas
- 4.9.3. Adiabatic Evolution of a Gas
- 4.9.4. Kinetic Theory of Temperature
- 4.9.5. Mechanical Argument for Temperature
- 4.9.6. Principle of Equipartition of Energy
- 4.9.7. Virial Theorem

4.10. Introduction to Statistical Mechanics
- 4.10.1. Introduction and Objectives
- 4.10.2. General Concepts
- 4.10.3. Entropy, Probability and Boltzmann's Law
- 4.10.4. Maxwell-Boltzmann Distribution Law
- 4.10.5. Thermodynamic and Partition Functions

Module 5. Advanced Thermodynamics

5.1. Formalism of Thermodynamics
- 5.1.1. Laws of Thermodynamics
- 5.1.2. The Fundamental Equation
- 5.1.3. Internal Energy: Euler's Form
- 5.1.4. Gibbs-Duhem Equation
- 5.1.5. Legendre Transformations
- 5.1.6. Thermodynamic Potentials
- 5.1.7. Maxwell's Relations for a Fluid
- 5.1.8. Stability Conditions

5.2. Microscopic Description of Macroscopic Systems I
- 5.2.1. Microstates and Macrostates: Introduction
- 5.2.2. Phase Space
- 5.2.3. Collectivities
- 5.2.4. Microcanonical Collectivity
- 5.2.5. Thermal Equilibrium

5.3. Microscopic Description of Macroscopic Systems II
- 5.3.1. Discrete Systems
- 5.3.2. Statistical Entropy
- 5.3.3. Maxwell-Boltzmann Distribution
- 5.3.4. Pressure
- 5.3.5. Effusion

5.4. Canonical Collectivity
- 5.4.1. Partition Function
- 5.4.2. Ideal Systems
- 5.4.3. Energy Degeneration
- 5.4.4. Behavior of the Monoatomic Ideal Gas at a Potential
- 5.4.5. Energy Equipartition Theorem
- 5.4.6. Discrete Systems

5.5. Magnetic Systems
- 5.5.1. Thermodynamics of Magnetic Systems
- 5.5.2. Classical Paramagnetism
- 5.5.3. ½ Spin Paramagnetism
- 5.5.4. Adiabatic Demagnetization

Module 6. Nuclear and Particle Physics

6.1. Introduction to Nuclear Physics
- 6.1.1. Periodic Table of the Elements
- 6.1.2. Important Discoveries
- 6.1.3. Atomic Models
- 6.1.4. Important Definitions. Scales and Units in Nuclear Physics
- 6.1.5. Segré's Diagram

6.2. Nuclear Properties
- 6.2.1. Binding Energy
- 6.2.2. Semiempirical Mass Formula
- 6.2.3. Fermi Gas Model
- 6.2.4. Nuclear Stability
  - 6.2.4.1. Alpha Decay
  - 6.2.4.2. Beta Decay
  - 6.2.4.3. Nuclear Fusion
- 6.2.5. Nuclear Desexcitation
- 6.2.6. Double Beta Decay

6.3. Nuclear Scattering
- 6.3.1. Internal Structure: Dispersion Study
- 6.3.2. Effective Section
- 6.3.3. Rutherford's Experiment: Rutherford's Effective Section
- 6.3.4. Mott's Effective Section
- 6.3.5. Momentum Transfer and Shape Factors
- 6.3.6. Nuclear Charge Distribution
- 6.3.7. Neutron Scattering

6.4. Nuclear Structure and Strong Interaction
- 6.4.1. Nucleon Scattering
- 6.4.2. Bound States Deuterium
- 6.4.3. Strong Nuclear Interaction
- 6.4.4. Magic Numbers
- 6.4.5. The Layered Model of the Nucleus
- 6.4.6. Nuclear Spin and Parity
- 6.4.7. Electromagnetic Moments of the Nucleus
- 6.4.8. Collective Nuclear Excitations: Dipole Oscillations, Vibrational States and Rotational States

6.5. Nuclear Structure and Strong Interaction II
- 6.5.1. Classification of Nuclear Reactions
- 6.5.2. Reaction Kinematics
- 6.5.3. Conservation Laws
- 6.5.4. Nuclear Spectroscopy
- 6.5.5. The Compound Nucleus Model
- 6.5.6. Direct Reactions
- 6.5.7. Elastic Dispersion

6.6. Introduction to Particle Physics
- 6.6.1. Particles and Antiparticles
- 6.6.2. Fermions and Baryons
- 6.6.3. The Standard Model of Elementary Particles: Leptons and Quarks
- 6.6.4. The Quark Model
- 6.6.5. Intermediate Vector Bosons

6.7. Dynamics of Elementary Particles
- 6.7.1. The Four Fundamental Interactions
- 6.7.2. Quantum Electrodynamics
- 6.7.3. Quantum Chromodynamics
- 6.7.4. Weak Interaction
- 6.7.5. Disintegrations and Conservation Laws

6.8. Relativistic Kinematics
- 6.8.1. Lorentz Transformations
- 6.8.2. Quatrivectors
- 6.8.3. Energy and Linear Momentum
- 6.8.4. Collisions
- 6.8.5. Introduction to Feynman Diagrams

6.9. Symmetries
- 6.9.1. Groups, Symmetries and Conservation Laws
- 6.9.2. Spin and Angular Momentum
- 6.9.3. Addition of Angular Momentum
- 6.9.4. Flavor Symmetries
- 6.9.5. Parity
- 6.9.6. Load Conjugation
- 6.9.7. CP Violation
- 6.9.8. Time Reversal
- 6.9.9. CPT Conservation

6.10. Bound States
- 6.10.1. Schrödinger's Equation for Central Potentials
- 6.10.2. Hydrogen Atom
- 6.10.3. Fine Structure
- 6.10.4. Hyperfine Structure
- 6.10.5. Positronium
- 6.10.6. Quarkonium
- 6.10.7. Lightweight Mesons
- 6.10.8. Baryons

Module 7. Fluid Mechanics

7.1. Introduction to Fluid Physics
- 7.1.1. No-Slip Condition
- 7.1.2. Classification of Flows
- 7.1.3. Control System and Volume
- 7.1.4. Fluid Properties
  - 7.1.4.1. Density
  - 7.1.4.2. Specific Gravity
  - 7.1.4.3. Vapor Pressure
  - 7.1.4.4. Cavitation
  - 7.1.4.5. Specific Heat
  - 7.1.4.6. Compressibility
  - 7.1.4.7. Speed of Sound
  - 7.1.4.8. Viscosity
  - 7.1.4.9. Surface Tension

7.2. Fluid Statics and Kinematics
- 7.2.1. Pressure
- 7.2.2. Pressure Measuring Devices
- 7.2.3. Hydrostatic Forces on Submerged Surfaces
- 7.2.4. Buoyancy, Stability and Motion of Rigid Solids
- 7.2.5. Lagrangian and Eulerian Description
- 7.2.6. Flow Patterns
- 7.2.7. Kinematic Tensors
- 7.2.8. Vorticity
- 7.2.9. Rotationality
- 7.2.10. Reynolds Transport Theorem

7.3. Bernoulli and Energy Equations
- 7.3.1. Conservation of Mass
- 7.3.2. Mechanical Energy and Efficiency
- 7.3.3. Bernoulli's Equation
- 7.3.4. General Energy Equation
- 7.3.5. Stationary Flow Energy Analysis

7.4. Fluid Analysis
- 7.4.1. Conservation of Linear Momentum Equations
- 7.4.2. Conservation of Angular Momentum Equations
- 7.4.3. Dimensional Homogeneity
- 7.4.4. Variable Repetition Method
- 7.4.5. Buckingham's Pi Theorem

7.5. Flow in Pipes
- 7.5.1. Laminar and Turbulent Flow
- 7.5.2. Inlet Region
- 7.5.3. Minor Losses
- 7.5.4. Networks

7.6. Differential Analysis and Navier-Stokes Equations
- 7.6.1. Conservation of Mass
- 7.6.2. Current Function
- 7.6.3. Cauchy Equation
- 7.6.4. Navier-Stokes Equation
- 7.6.5. Dimensionless Navier-Stokes Equations of Motion
- 7.6.6. Stokes Flow
- 7.6.7. Inviscid Flow
- 7.6.8. Irrotational Flow
- 7.6.9. Boundary Layer Theory. Clausius Equation

7.7. External Flow
- 7.7.1. Drag and Lift
- 7.7.2. Friction and Pressure
- 7.7.3. Coefficients
- 7.7.4. Cylinders and Spheres
- 7.7.5. Aerodynamic Profiles

7.8. Compressible Flow
- 7.8.1. Stagnation Properties
- 7.8.2. One-Dimensional Isentropic Flow
- 7.8.3. Nozzles
- 7.8.4. Shock Waves
- 7.8.5. Expansion Waves
- 7.8.6. Rayleigh Flow
- 7.8.7. Fanno Flow

7.9. Open Channel Flow
- 7.9.1. Classification
- 7.9.2. Froude Number
- 7.9.3. Wave Speed
- 7.9.4. Uniform Flow
- 7.9.5. Gradually Varying Flow
- 7.9.6. Rapidly Varying Flow
- 7.9.7. Hydraulic Jump

7.10. Non-Newtonian Fluids
  7.10.1. Standard Flows
  7.10.2. Material Functions
  7.10.3. Experiments
  7.10.4. Generalized Newtonian Fluid Model
  7.10.5. Generalized Linear Viscoelastic Fluid Model
  7.10.6. Advanced Constitutive Equations and Geometry

Module 8. Remote Sensing and Image Processing

8.1. Introduction to Image Processing
  8.1.1. Motivation
  8.1.2. Digital Medical and Atmospheric Imaging
  8.1.3. Modalities of Medical and Atmospheric Imaging
  8.1.4. Quality Parameters
  8.1.5. Storage and Display
  8.1.6. Processing Platforms
  8.1.7. Image Processing Applications
8.2. Image Optimization, Registration and Fusion
  8.2.1. Introduction and Objectives
  8.2.2. Intensity Transformations
  8.2.3. Noise Correction
  8.2.4. Filters in the Spatial Domain
  8.2.5. Frequency Domain Filters
  8.2.6. Introduction and Objectives
  8.2.7. Geometric Transformations
  8.2.8. Records
  8.2.9. Multimodal Merging
  8.2.10. Applications of Multimodal Fusion

8.3. 3D and 4D Segmentation and Processing Techniques
- 8.3.1. Introduction and Objectives
- 8.3.2. Segmentation Techniques
- 8.3.3. Morphological Operations
- 8.3.4. Introduction and Objectives
- 8.3.5. Morphological and Functional Imaging
- 8.3.6. 3D Analysis
- 8.3.7. 4D Analysis

8.4. Feature Extraction
- 8.4.1. Introduction and Objectives
- 8.4.2. Texture Analysis
- 8.4.3. Morphometric Analysis
- 8.4.4. Statistics and Classification
- 8.4.5. Presentation of Results

8.5. *Machine Learning*
- 8.5.1. Introduction and Objectives
- 8.5.2. Big Data
- 8.5.3. *Deep Learning*
- 8.5.4. Software Tools
- 8.5.5. Applications
- 8.5.6. Limitations

8.6. Introduction to Remote Sensing
- 8.6.1. Introduction and Objectives
- 8.6.2. Definition of Remote Sensing
- 8.6.3. Exchange Particles in Remote Sensing
- 8.6.4. Active and Passive Remote Sensing
- 8.6.5. Remote Sensing Software with Python

8.7. Passive Photon Remote Sensing
- 8.7.1. Introduction and Objectives
- 8.7.2. Light
- 8.7.3. Interaction of Light with Matter
- 8.7.4. Black Bodies
- 8.7.5. Other Effects
- 8.7.6. Point Cloud Diagram

8.8. Passive Remote Sensing in Ultraviolet, Visible, Infrared, Infrared, Microwave and Radio
- 8.8.1. Introduction and Objectives
- 8.8.2. Passive Remote Sensing: Photon Detectors
- 8.8.3. Visible Observation with Telescopes
- 8.8.4. Types of Telescopes
- 8.8.5. Mounts
- 8.8.6. Optics
- 8.8.7. Ultraviolet
- 8.8.8. Infrared
- 8.8.9. Microwaves and Radio Waves
- 8.8.10 netCDF4 Files

8.9. Active Remote Sensing with Lidar and Radar
- 8.9.1. Introduction and Objectives
- 8.9.2. Active Remote Sensing
- 8.9.3. Atmospheric Radar
- 8.9.4. Weather Radar
- 8.9.5. Comparison of Lidar with Radar
- 8.9.6. HDF4 Files

8.10. Passive Remote Sensing of Gamma and X-Rays
- 8.10.1. Introduction and Objectives
- 8.10.2. Introduction to X-ray Observation
- 8.10.3. Gamma Ray Observation
- 8.10.4. Remote Sensing Software

Module 9. Biophysics

9.1. Introduction to Biophysics
- 9.1.1. Introduction to Biophysics
- 9.1.2. Characteristics of Biological Systems
- 9.1.3. Molecular Biophysics
- 9.1.4. Cell Biophysics
- 9.1.5. Biophysics of Complex Systems

9.2. Introduction to the Thermodynamics of Irreversible Processes
- 9.2.1. Generalization of the Second Principle of Thermodynamics for Open Systems
- 9.2.2. Dissipation Function
- 9.2.3. Linear Relationships between Conjugate Thermodynamic Fluxes and Forces
- 9.2.4. Validity Interval of the Linear Thermodynamics
- 9.2.5. Properties of Phenomenological Coefficients
- 9.2.6. Onsager's Relations
- 9.2.7. Theorem of Minimum Entropy Production
- 9.2.8. Stability of Steady States in the Vicinity of Equilibrium. Stability Criteria
- 9.2.9. Processes Far from Equilibrium
- 9.2.10. Evolution Criteria

9.3. Arrangement in Time: Irreversible Processes away from Equilibrium
- 9.3.1. Kinetic Processes Considered as Differential Equations
- 9.3.2. Stationary Solutions
- 9.3.3. Lotka-Volterra Model
- 9.3.4. Stability of Stationary Solutions: perturbation method
- 9.3.5. Trajectories: Solutions of the Systems of Differential Equations
- 9.3.6. Types of Stability
- 9.3.7. Analysis of the Stability in the Lotka-Volterra Model
- 9.3.8. Timing: Biological Clocks
- 9.3.9. Structural Stability and Bifurcations. Brusselator's Model
- 9.3.10. Classification of the Different Types of Dynamic Behavior

9.4. Spatial Arrangement: Systems with Diffusion
- 9.4.1. Spatial-Temporal Self-Organization
- 9.4.2. Reaction-Diffusion Equations
- 9.4.3. Solutions of These Equations
- 9.4.4. Examples

9.5. Chaos in Biological Systems
- 9.5.1. Introduction
- 9.5.2. Attractors. Strange or Chaotic Attractors
- 9.5.3. Definition and Properties of Chaos
- 9.5.4. Ubiquity: Chaos in Biological Systems
- 9.5.5. Universality: Routes to Chaos
- 9.5.6. Fractal Structure Fractals
- 9.5.7. Fractal Properties
- 9.5.8. Reflections on Chaos in Biological Systems

9.6. Membrane Potential Biophysics
- 9.6.1. Introduction
- 9.6.2. First Approach to the Membrane Potential: Nernst Potential
- 9.6.3. Gibbs-Donnan Potentials
- 9.6.4. Surface Potentials

9.7. Transport across Membranes: Passive Transport
- 9.7.1. Nernst-Planck Ecuation
- 9.7.2. Constant Field Theory
- 9.7.3. GHK Equation in Complex Systems
- 9.7.4. Fixed Charge Theory
- 9.7.5. Action Potential Transmission
- 9.7.6. TPI Transport Analysis
- 9.7.7. Electrokinetic Phenomena

9.8. Facilitated Transport. Ion Channels Transporters
- 9.8.1. Introduction
- 9.8.2. Characteristics of Transport Facilitated by Transporters and Ion Channels
- 9.8.3. Model of Oxygen Transport with Hemoglobin Thermodynamics of Irreversible Processes
- 9.8.4. Examples

9.9. Active Transport: Effect of Chemical Reactions on Transport Processes
- 9.9.1. Chemical Reactions and Steady State Concentration Gradients
- 9.9.2. Phenomenological Description of Active Transport
- 9.9.3. The Sodium-Potassium Pump
- 9.9.4. Oxidative Phosphorylation

9.10. Nervous Impulses
- 9.10.1. Phenomenology of the Action Potential
- 9.10.2. Mechanism of the Action Potential
- 9.10.3. Hodgkin-Huxley Mechanism
- 9.10.4. Nerves, Muscles and Synapses

Module 10. Medical Physics

10.1. Natural and Artificial Radiation Sources
- 10.1.1. Alpha, Beta and Gamma Emitting Nuclei
- 10.1.2. Nuclear Reactions
- 10.1.3. Neutron Sources
- 10.1.4. Charged Particle Accelerators
- 10.1.5. X-Ray Generators

10.2. Radiation-Matter Interaction
- 10.2.1. Photon Interactions (Rayleigh and Compton Scattering, Photoelectric Effect and Electron-Positron Pair Creation)
- 10.2.2. Electron-Positron Interactions (Elastic and Inelastic Collisions, Emission of Braking Radiation or Bremsstrahlung and Positron Annihilation)
- 10.2.3. Ion Interactions
- 10.2.4. Neutron Interactions

10.3. Monte Carlo Simulation of Radiation Transport
- 10.3.1. Pseudo-Random Number Generation
- 10.3.2. Drawing Techniques
- 10.3.3. Radiation Transport Simulation
- 10.3.4. Practical Examples

10.4. Dosimetry
- 10.4.1. Dosimetric Quantities and Units (ICRU)
- 10.4.2. External Exposure
- 10.4.3. Radionuclides Incorporated in the Body
- 10.4.4. Radiation-Matter Interaction
- 10.4.5. Radiological Protection
- 10.4.6. Permitted Limits for the Public and Professionals

10.5. Radiobiology and Radiotherapy
- 10.5.1. Radiobiology
- 10.5.2. External Radiotherapy with Photons and Electrons
- 10.5.3. Brachytherapy
- 10.5.4. Advanced Treatment Methods (Ions and Neutrons)
- 10.5.5. Planning

10.6. Biomedical Imaging
- 10.6.1. Biomedical Imaging Techniques
- 10.6.2. Image Enhancement through Histogram Modification
- 10.6.3. Fourier Transform
- 10.6.4. Filtering
- 10.6.5. Restoration

10.7. Nuclear Medicine
- 10.7.1. Tracers
- 10.7.2. Detection Equipment
- 10.7.3. Gamma Camera
- 10.7.4. Planar Scintigraphy
- 10.7.5. SPECT
- 10.7.6. PET (Positron Emission Tomography)
- 10.7.7. Small Animal Equipment

"Apply the fundamentals of medical physics to clinical diagnosis and treatment with a technological perspective"

04
Teaching Objectives

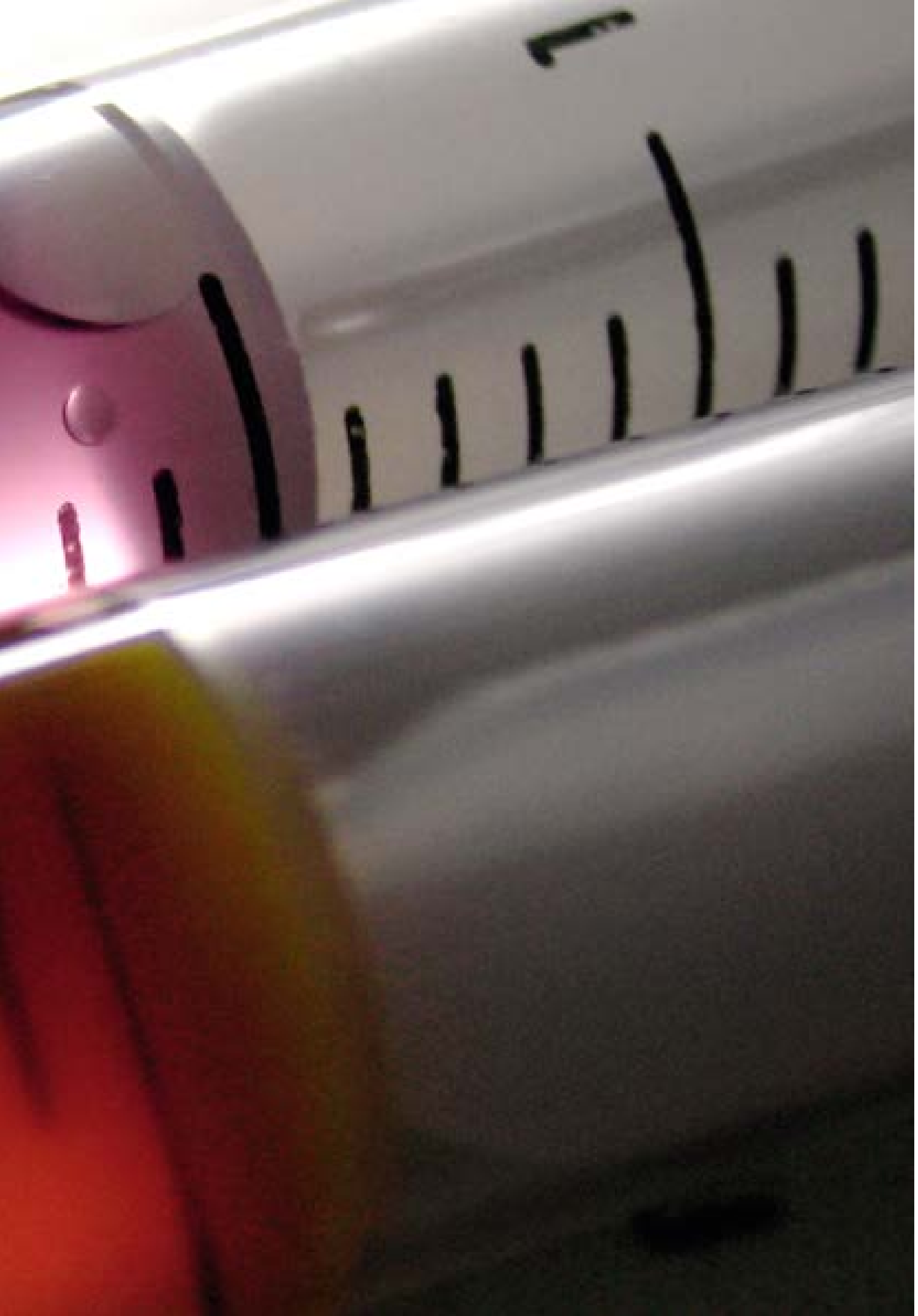
This program from TECH provides professionals with the necessary tools to understand and apply the fundamentals of medical physics. Throughout this degree program, students will be able to interpret fluid dynamics equations, apply thermodynamic principles, and master concepts of optics, nuclear physics, and biophysics. In addition, they will develop competencies in 3D and 4D image processing, remote sensing, and data analysis. This Master's Degree guarantees the development of critical and interdisciplinary skills, preparing graduates to perform with excellence in scientific, clinical, or technological environments.

Learn how photons and charged particles interact in human tissues and their application in medicine"

General Objectives

- Explain physical behaviors using the basic equations of fluid dynamics
- Understand the four laws of thermodynamics and apply them to the study of thermodynamic systems
- Apply processes of analysis, synthesis, and critical reasoning
- Understand the main principles on which medical physics is based
- Comprehend the concepts of 3D and 4D segmentation and processing
- Study advances in remote sensing and image processing

> *Understand the main models of particle physics, including the Standard Model and theories beyond it"*



Specific Objectives

Module 1. Chemistry

- Explain in a clear manner basic chemical phenomena and processes that interact with the environment
- Describe the structure, physicochemical properties, and reactivity of the elements and compounds involved in biogeochemical cycles

Module 2. Introduction to Modern Physics

- Understand new developments and advances in the field of physics, both theoretical and experimental
- Develop communication skills to write reports and documents, or to deliver effective presentations

Module 3. Optics

- Deepen knowledge of the basic principles of geometrical optics
- Understand the physical principles on which the most common optical instruments are based
- Understand and analyze optical phenomena present in everyday life
- Apply optical concepts to the resolution of physical problems related to optics and understand the relationship between optics and other areas of physics

Module 4. Thermodynamics

- Solve problems effectively in the field of thermodynamics
- Acquire basic notions of statistical mechanics
- Analyze different contexts and environments within physics based on a solid mathematical foundation
- Understand and use mathematical and numerical methods commonly employed in thermodynamics

Module 5. Advanced Thermodynamics

- Advance in the principles of thermodynamics
- Understand the concept of ensembles and distinguish between different types, identifying which ensemble is most suitable for the study of a given system depending on the type of thermodynamic system
- Understand the basic notions of the Ising model
- Understand the difference between bosonic and baryonic statistics

Module 6. Nuclear and Particle Physics

- Acquire basic knowledge of nuclear and particle physics
- Distinguish between different nuclear decay processes
- Understand Feynman diagrams, their use, and how to draw them
- Perform relativistic collision calculations

Module 7. Fluid Mechanics

- Understand the general concepts of fluid physics and solve related problems
- Understand the basic characteristics of fluids and their behavior under different conditions
- Understand constitutive equations
- Gain confidence in the use of the Navier–Stokes equations

Module 8. Remote Sensing and Image Processing

- Acquire basic knowledge of medical and atmospheric image processing and their applications in the respective fields of medical and atmospheric physics
- Develop skills in image optimization, registration, and fusion

Module 9. Biophysics

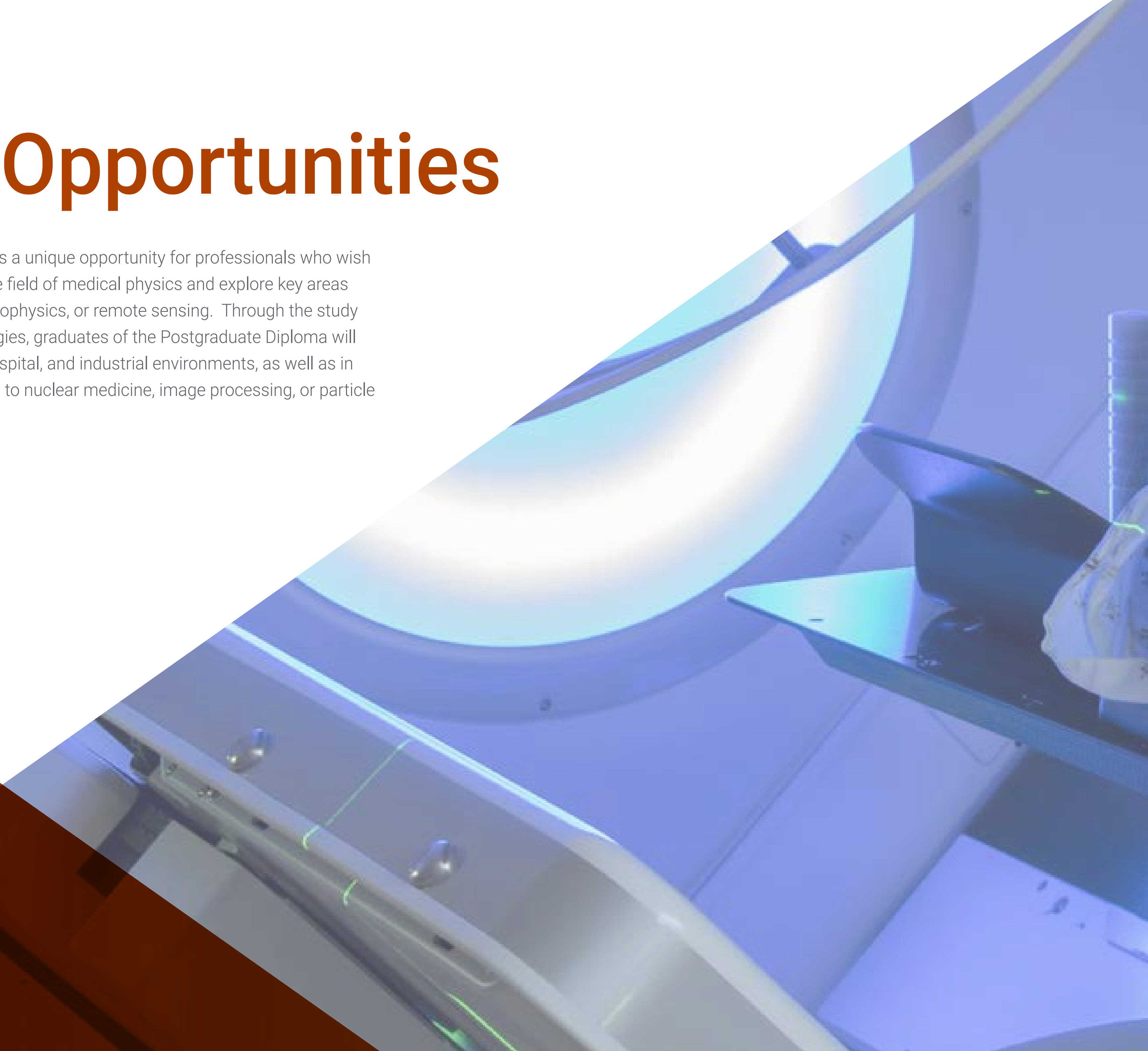
- Understand the characteristics of living systems from a physical perspective
- Acquire basic knowledge of the different types of transport across cell membranes and their functioning
- Understand the mathematical relationships that model biological processes
- Develop basic notions of the physics of nerve impulses

Module 10. Medical Physics

- Study the concepts of metrology and dosimetry of ionizing radiation
- Understand the physical principles of diagnostic imaging
- Identify the physical principles and practical applications of nuclear medicine
- Understand the physical principles underlying radiation therapy

05
Career Opportunities

This program from TECH represents a unique opportunity for professionals who wish to expand their competencies in the field of medical physics and explore key areas such as thermodynamics, optics, biophysics, or remote sensing. Through the study and mastery of advanced technologies, graduates of the Postgraduate Diploma will be able to stand out in scientific, hospital, and industrial environments, as well as in the development of projects related to nuclear medicine, image processing, or particle analysis.



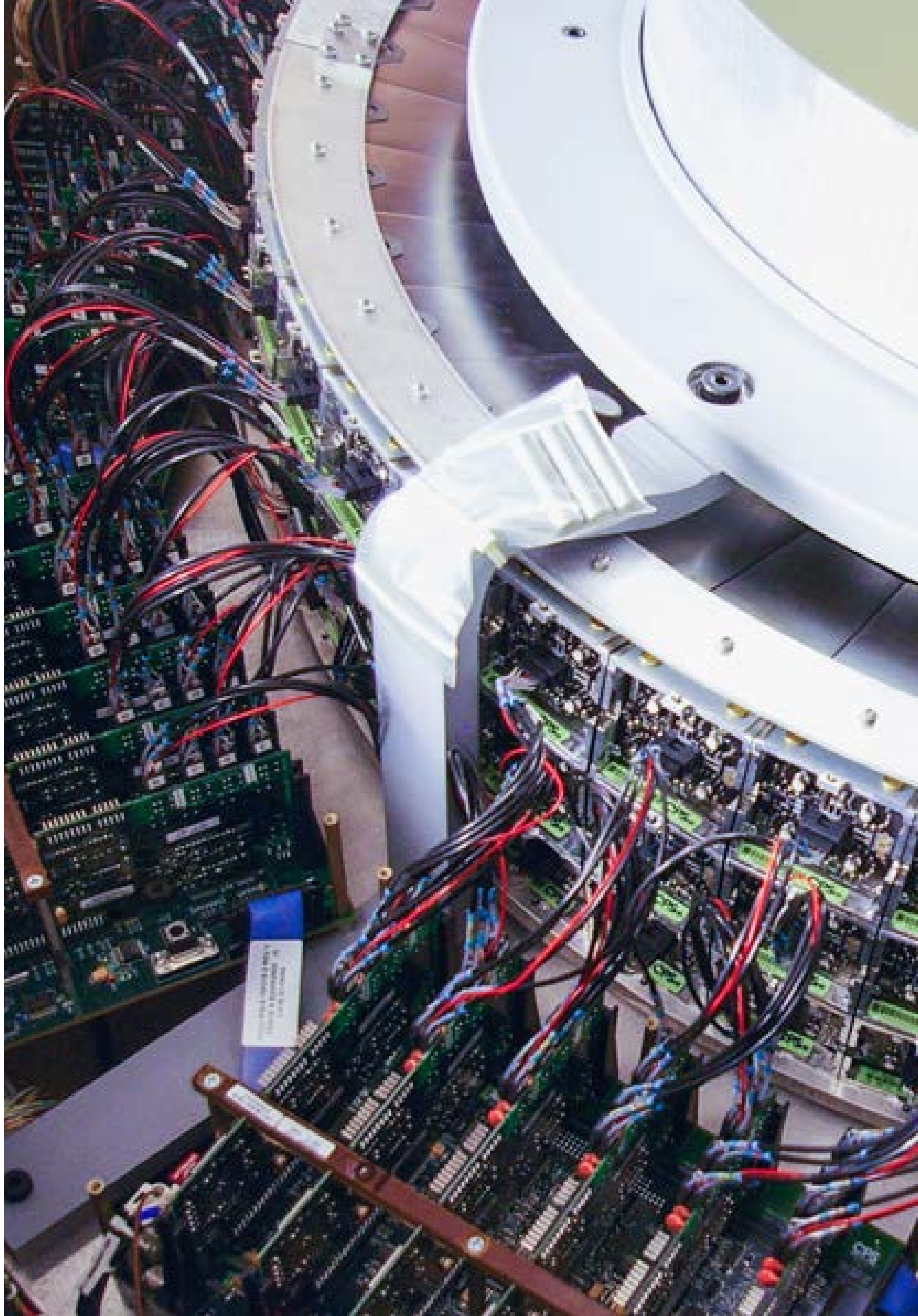
You will apply advanced knowledge of physics and digital technologies to the study of medical, biological, and environmental systems, carrying out a highly specialized and up-to-date professional activity"

Graduate Profile

Graduates of this Master's Degree from TECH will be professionals qualified to apply the principles of medical physics in real-world contexts, ranging from diagnostic imaging to the study of particles and biological systems. They will master digital analysis and modeling tools, be proficient in the use of specialized remote sensing software, and have the ability to interpret complex data related to physical, chemical, and biological phenomena. This specialist will be able to contribute to technological innovation in the medical and scientific fields, as well as actively participate in interdisciplinary research projects.

> *You will be able to apply 3D and 4D segmentation techniques, accurately analyze fluid behavior, and address challenges in medical physics with rigor and expertise.*

- **Integration of Advanced Technologies:** Mastery of digital tools applied to medical diagnosis, remote sensing, and atmospheric and medical image processing
- **Resolution of Complex Physical Problems:** Ability to apply mathematical and numerical models to the resolution of problems in thermodynamics, optics, fluid mechanics, and nuclear physics
- **Interdisciplinary Knowledge:** In-depth understanding of the physical, chemical, and biological principles that govern medical and environmental systems
- **Ethical Commitment in Applied Science:** Awareness of the effects of ionizing radiation, its safe use in medical environments, and the application of ethical standards in scientific contexts



After completing the university program, you will be able to apply your knowledge and skills in the following positions:

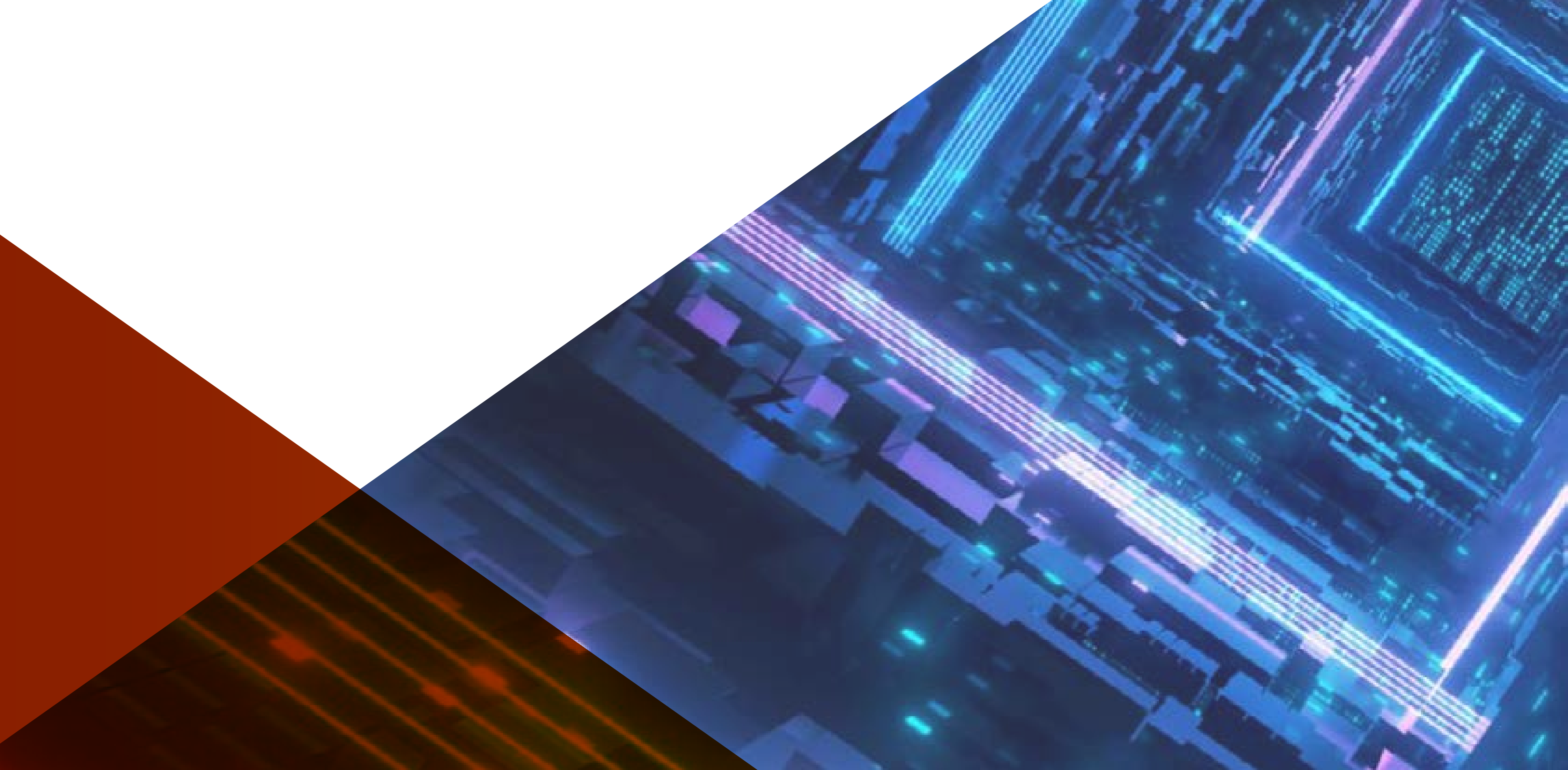
1. **Hospital Medical Physics Specialist:** Professional qualified to collaborate with clinical teams in diagnostic imaging, radiotherapy, or nuclear medicine.
2. **Medical Image Processing Analyst:** Responsible for the use of specialized software in remote sensing and advanced visualization for 3D and 4D images.
3. **Scientific Consultant in Biophysics and Thermodynamics:** Advisor on scientific projects requiring analysis of biological systems from a physical and energetic perspective.
4. **Particle and Radiation Physics Researcher:** Professional involved in laboratories or research centers studying nuclear processes and subatomic particles.
5. **Simulation and Computational Modeling Technician:** Specialist in the development of physical and mathematical models for application in clinical, atmospheric, or industrial environments.
6. **Radiological Protection Advisor:** Responsible for implementing regulations and controls on the use of ionizing radiation in hospital or research settings.

Become a reference in the applied study of Medical Physics and expand your professional horizons in clinical, industrial, or scientific research fields"

06

Software Licenses Included

TECH is a leading reference in the academic world for combining the latest technology with teaching methodologies to enhance the teaching-learning process. To achieve this, it has established a network of alliances that allows it to access the most advanced software tools used in the professional world.



Upon enrolling, you will receive, completely free of charge, academic credentials for the following professional software applications"

TECH has established a network of professional alliances with the leading providers of software applied to various professional fields. These alliances allow TECH to access hundreds of software applications and licenses, making them available to its students.

The academic software licenses will allow students to use the most advanced applications in their professional field, so they can become familiar with them and master their use without incurring additional costs. TECH will be responsible for managing the licensing process so that students may use them without limitations throughout the entire duration of the Master's Degree in Medical Physics, completely free of charge.

TECH will provide free access to the following software applications:

Google Career Launchpad

Google Career Launchpad is a solution for developing digital skills in technology and data analysis. With an estimated value of **5,000 dollars**, it is included **for free** in TECH's university program, providing access to interactive labs and certifications recognized in the industry.

This platform combines technical training with practical cases, using technologies such as BigQuery and Google AI. It offers simulated environments to work with real data, along with a network of experts for personalized guidance.

Key Features:

- **Specialized Courses:** Updated content in cloud computing, machine learning, and data analysis
- **Live Labs:** Hands-on practice with real Google Cloud tools, no additional configuration required
- **Integrated Certifications:** Preparation for official exams with international validity
- **Professional Mentoring:** Sessions with Google experts and technology partners
- **Collaborative Projects:** Challenges based on real-world problems from leading companies

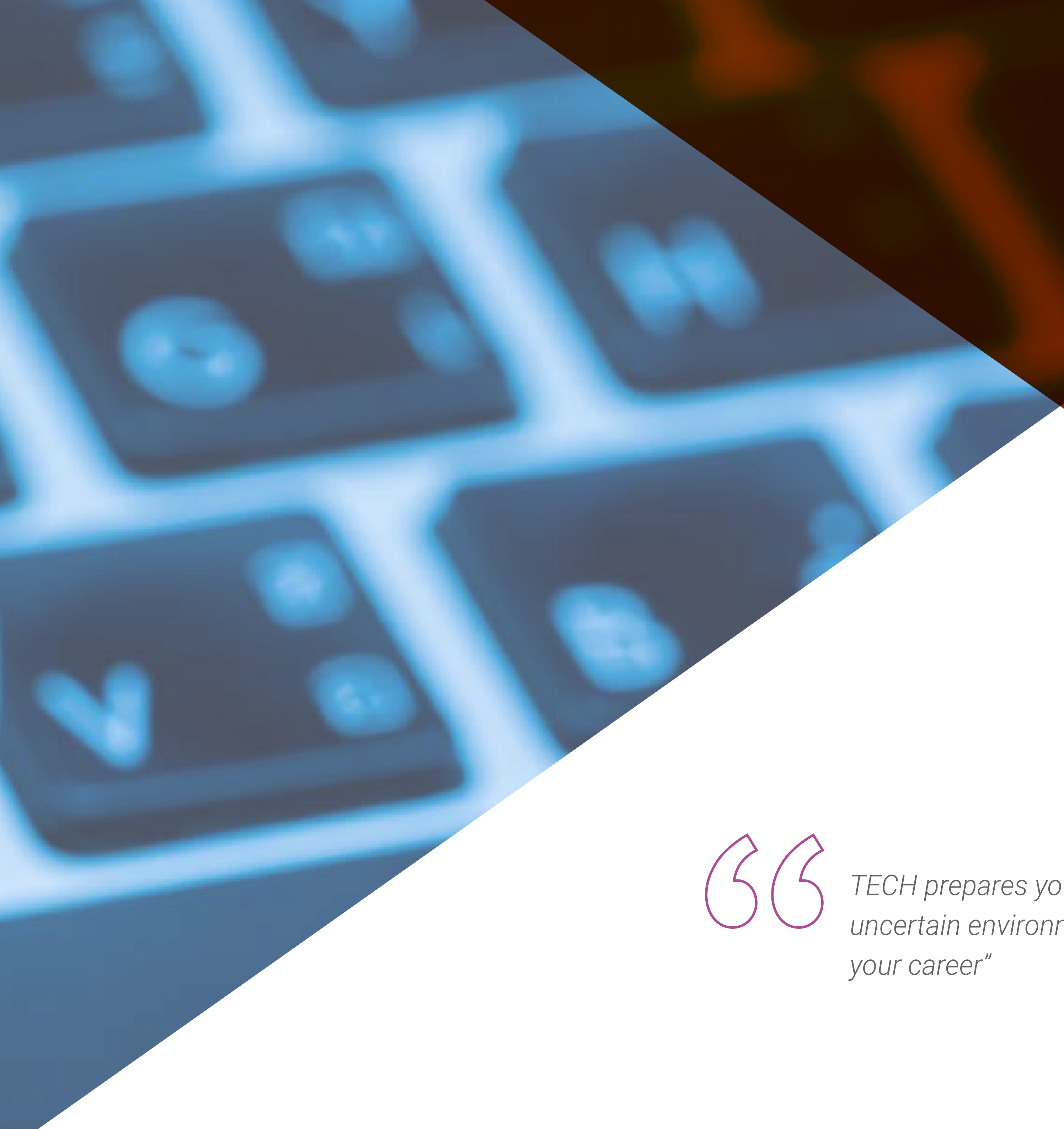
In conclusion, **Google Career Launchpad** connects users with the latest market technologies, facilitating their entry into fields such as artificial intelligence and data science with industry-backed credentials.

Thanks to TECH, you will have free access to the best software applications in your professional field"

07
Study Methodology

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

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



TECH prepares 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 absolute protagonist.
The pedagogical 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 the student who chooses the time they spend studying, 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 attend live classes, which many times they cannot attend. The learning activities will be done when it is convenient for them. You will always be able to decide when and from where to study.

At TECH you will NOT have in person classes (which you might not be able to attend)"

The most comprehensive academic programs worldwide

TECH is distinguished by offering the most complete academic pathways within the higher education landscape. This level of comprehensiveness is achieved through the development of curricula that not only encompass essential knowledge but also integrate the latest innovations in each area of study.

By being constantly updated, 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 preparation that provides them with a notable competitive advantage to advance in 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 smartphone wherever you want, whenever you want and for as long as you want”

Case Studies or Case Method

The case method has been the learning system most used by the best business schools in the world. 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 solve them. In 1924 it was established as a standard teaching method at Harvard.

With this teaching model, it is the student who builds their professional competence through strategies such as Learning by Doing or Design Thinking, which are 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, argue 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 **Method**

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, they are able to review and reiterate the key concepts of each subject and learn to apply them in a real environment.

Along the same lines, and according to multiple scientific researches, repetition 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 more performance, involving you more in your specialization, developing a critical spirit, defending arguments and contrasting opinions: a direct equation to success.

A 100% online Virtual Campus with the best teaching resources

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 reiteration, through audios, presentations, animations, images, etc.

The latest scientific evidence in the field of Neurosciences 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 for long-term retention. This is a model called Neurocognitive Context-Dependent E-Learning that is consciously applied in this university program.

Furthermore, in order to maximize tutor-student contact, a wide range of communication possibilities are provided, both in real time and deferred (internal messaging, discussion forums, telephone answering service, e-mail contact with the technical secretary, chat and videoconferencing).

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, in accordance with their accelerated professional updating.

The online mode of study of this program will allow you to organize your time and your 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 best rated by its students

The results of this innovative academic 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 has become 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 up to date with the technological and pedagogical vanguard.

You will be able to learn with the advantages of access to simulated learning environments and the learning by observation approach, that is, the "Learning from an Expert" approach.

Therefore, 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 skills and abilities in each thematic area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop within the context of the globalization in which we live.

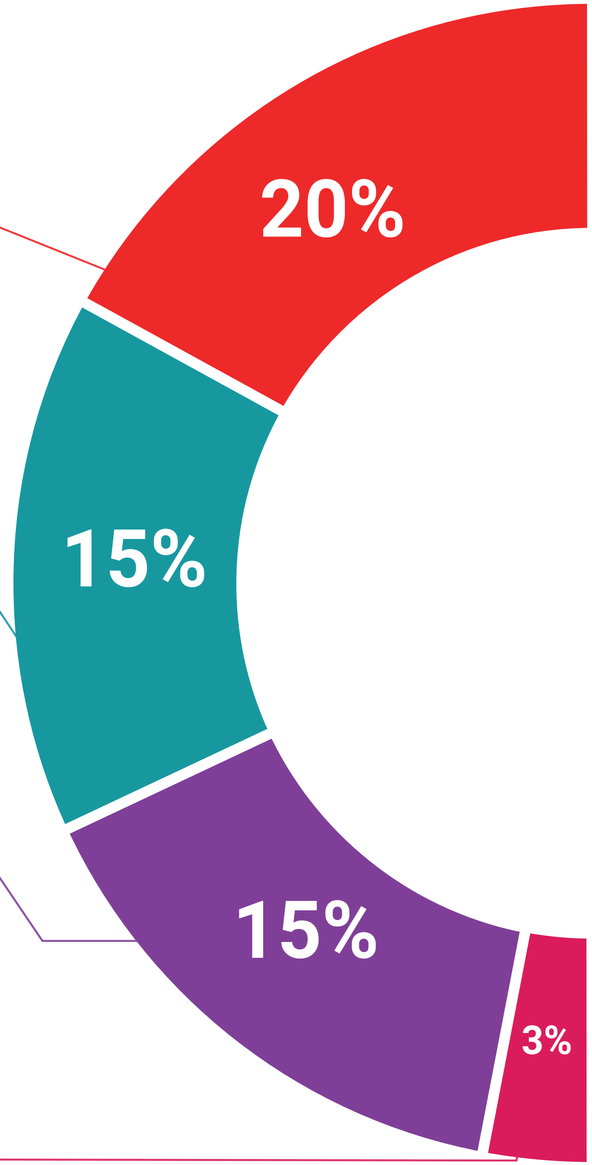
Interactive Summaries

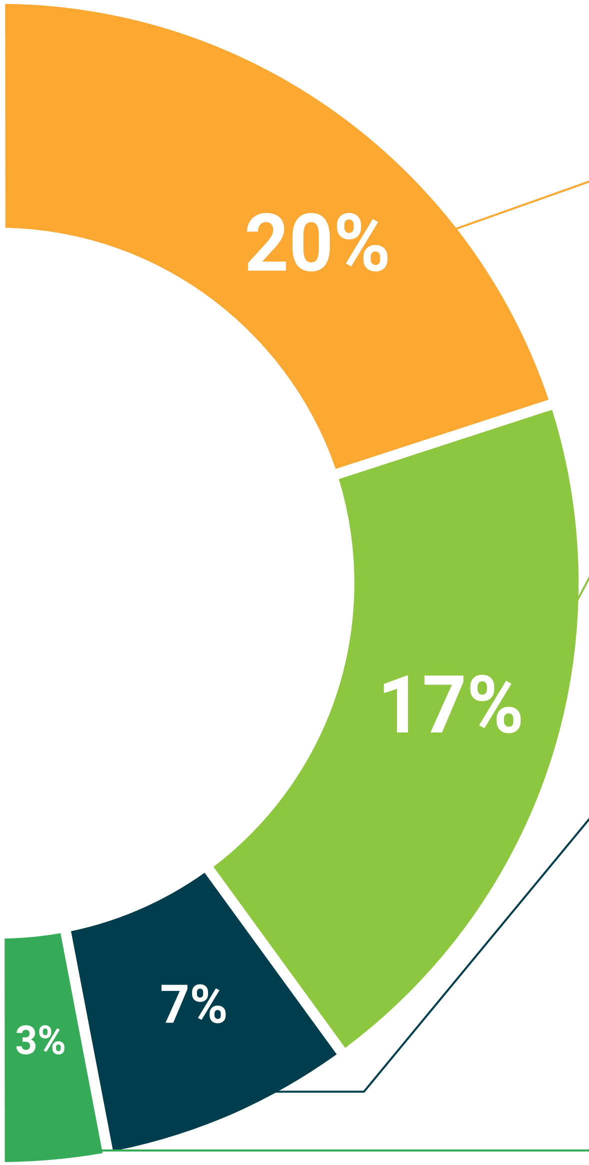
We present the contents in an attractive and dynamic way in multimedia pills that include audio, videos, images, diagrams and concept maps in order to reinforce knowledge.

This unique educational system for the presentation of multimedia content was awarded by Microsoft as "Successful Case in Europe."

Additional Reading

Recent articles, consensus documents, international guidelines... In our virtual library you will have access to everything you need to complete your course.





Case Studies

You will complete a selection of the best case studies in the field. Cases presented, analyzed and tutored by the best specialists in the world.

Testing & Retesting

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

Masterclasses

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

Learning from an expert strengthens knowledge and recall, and generates confidence in our 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.

08 Certificate

The Master's Degree in Medical Physics guarantees students, in addition to the most rigorous and up-to-date education, access to a diploma for the Master's Degree issued by TECH Global University.

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

This private qualification will allow you to obtain a diploma for the **Master's Degree in Medical Physical** 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 private qualification from **TECH Global University** is a European continuing education and professional development program that guarantees the acquisition of competencies in its area of expertise, providing significant curricular value to the student who successfully completes the program.

Title: **Master's Degree in Medical Physics**

Modality: **Online**

Duration: **12 months.**

Accreditation: **60 ECTS**

tech global university

Mr./Ms. ____________, with identification document ____________
has successfully passed and obtained the title of:

Master's Degree in Medical Physics

This is a private qualification of 1,800 hours of duration equivalent to 60 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024

Dr. Pedro Navarro Illana
Dean

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

Master's Degree in Medical Physics

General Structure of the Syllabus

Subject type	ECTS
Compulsory (CO)	60
Optional (OP)	0
External Work Placement (WP)	0
Master's Degree Thesis (MDT)	0
	Total 60

General Structure of the Syllabus

Year	Subject	ECTS	Type
1º	Chemistry	6	OB
1º	Introduction to Modern Physics	6	OB
1º	Optics	6	OB
1º	Thermodynamics	6	OB
1º	Advanced Thermodynamics	6	OB
1º	Nuclear and Particle Physics	6	OB
1º	Fluid Mechanics	6	OB
1º	Remote Sensing and Image Processing	6	OB
1º	Biophysics	6	OB
1º	Medical Physics	6	OB

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Dean

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

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Master's Degree
Medical Physics

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

Master's Degree
Medical Physics