



Postgraduate Certificate

Renal Lithiasis

» 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/renal-lithiasis

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According to a new report from the United Nations, approximately 12% of the global adult population suffers from Kidney Stones, with an incidence that has increased by 20% in the last decade. Despite advances in diagnostic and therapeutic techniques, both the prevention of recurrences and the optimization of personalized treatments remain key challenges for experts. Therefore, they have a responsibility to keep abreast of the most modern techniques in order to address Kidney Stones holistically and considerably improve the patient experience.

In this scenario, TECH has developed a cutting-edge program in Renal Lithiasis. Designed by leading experts in the field, the educational program will delve into subjects ranging from the historical evolution of the approach to kidney stones and the physicochemical aspects involved in their formation to innovative techniques for analyzing the severity of the conditions. In this way, graduates will acquire sophisticated skills to effectively diagnose and treat a variety of urologic diseases. In this sense, they will implement advanced methods to design and optimize personalized clinical protocols tailored to the individual needs of patients.

Likewise, with this 100% online qualification, physicians can organize their study time and plan their schedules at their convenience. In addition, TECH uses its innovative Relearning system, which consolidates the mastery of the concepts to be analyzed in an exhaustive and organic way. In addition, to access the Virtual Campus, all they need is an electronic device with an Internet connection. In this way, professionals will be able to enjoy the most complete didactic resources in the academic market. In addition, on the Virtual Campus they will find a wide range of multimedia materials such as interactive summaries, case studies, infographics, explanatory videos and specialized readings based on the latest scientific evidence.

This **Postgraduate Certificate in Renal Lithiasis** contains the most complete and up-todate scientific program on the market. Its most notable features are:

- The development of case studies presented by experts in Urology
- The graphic, schematic and eminently practical contents with which it is conceived gather scientific and practical information on those disciplines that are indispensable for professional practice
- Practical exercises where the self-assessment process can be carried out 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



You will assess the risk of Urinary Crystallization, taking into account factors such as the composition of the urine, the presence of inhibitors or the urodynamic conditions of the patients"

Introduction to the Program | 07 tech



You will learn more about the most modern techniques for measuring urinary pH, which will allow you to identify the severity of Kidney Stones"

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

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive education programmed to prepare for 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 course. For this purpose, students will be assisted by an innovative interactive video system created by renowned and experienced experts.

TECH's exclusive Relearning system will enable you to update your skills in the most rigorous way when it comes to dealing with Renal Lithiasis.

A flexible university program, without fixed schedules and with content available 24 hours a day. Enroll now!







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The world's best online university, according to FORBES

The prestigious Forbes magazine, specialized in business and finance, has highlighted TECH 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'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 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 syllabus





World's
No.1
The World's largest
online university

The most complete syllabuses on the university scene

TECH 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 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 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 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.









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Google Premier Partner

The American technology giant has awarded TECH 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'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 as the world's toprated 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 as the benchmark university institution at an international level, reflecting the excellence and positive impact of its educational model.

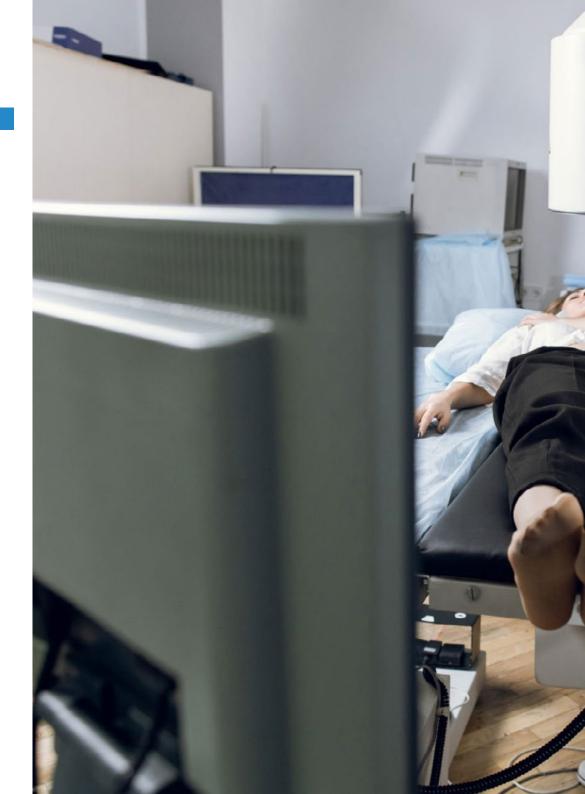




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Module 1. Renal Lithiasis

- 1.1. Renal Lithiasis in the Context of History
 - 1.1.1. The Ancient Age
 - 1.1.2. From the Renaissance to the Present Day
 - 1.1.3. Lessons from History
- 1.2. Physicochemical Aspects Involved in the Formation of Kidney Stones: Crystalline Nucleation
 - 1.2.1. Renal Lithiasis, Multifactorial Disease
 - 1.2.2. Crystal Formation in Liquids. Thermodynamic Aspects
 - 1.2.3. Crystal Formation in Liquids. Kinetic Aspects. Homogeneous Nucleation and Heterogeneous Nucleation
 - 1.2.3.1. Crystal Formation in Liquids. Homogeneous Nucleation and Metastable Zone
 - 1.2.3.2. Crystal Formation in Liquids. Heterogeneous Nucleation
- Physicochemical Aspects Involved in the Formation of Kidney Stones: Crystal Growth, Aggregation, Effect of Additives
 - 1.3.1. Crystal Formation in Liquids. Crystal growth
 - 1.3.1.1. Secondary Aggregation
 - 1.3.1.2. Primary Aggregation
 - 1.3.2. Influence of Additives on Crystallization. Crystal Development Inhibitors
 - 1.3.3. Influence of Additives on Crystallization. Solubilization Enhancers
- 1.4. Classification of Kidney Stones and Main Associated Disorders
 - 1.4.1. Factors Involved in the Formation of Kidney Stones
 - 1.4.2. Classification of Kidney Stones. Structural Characteristics
 - 1.4.3. Etiological Factors Associated with Each Type of Kidney Stone
- 1.5. Calcium Oxalate Stones
 - 1.5.1. Papillary Calcium Oxalate Monohydrate Stones
 - 1.5.2. Non-Papillary or Cavity Calcium Oxalate Monohydrate Stones
 - 1.5.3. Calcium Oxalate Dihydrate Stones
- 1.6. Phosphate Stones
 - 1.6.1. Infectious Phosphate or Struvite (Ammonium Magnesium Phosphate) Stones
 - 1.6.2. Non-Infectious Phosphate Stones
 - 1.6.2.1. Hydroxyapatite Stones
 - 1.6.2.2. Brushite Stones
 - 1.6.3. Mixed Stones of Calcium Oxalate Dihydrate and Hydroxyapatite





Syllabus | 15 tech

- 1.7. Uric Acid, Urate and Cystine Stones and Uncommon Stones
 - 1.7.1. Uric Acid and Urate Stones
 - 1.7.2. Cystine Stones
 - 1.7.3. Other Uncommon Types of Stones
- 1.8. Diagnostic Fundamentals I: Study of Renal Stones
 - 1.8.1. Morpho-compositional Study
 - 1.8.2. Instrumental Techniques
 - 1.8.2.1. Stereomicroscope (Binocular Magnifying Glass)
 - 1.8.2.2. Scanning Electron Microscopy
 - 1.8.2.3. Infrared Spectroscopy
 - 1.8.3. Recommended Protocol for the Study of Kidney Stones
- 1.9. Diagnostic Fundamentals II: Urinary pH
 - 1.9.1. Urinary pH and the Formation of Solids in Urine
 - 1.9.2. Altered Urinary pH Values
 - 1.9.2.1. Urinary pH Values Below 5.5
 - 1.9.2.2. Urine pH Values Above 6.2
 - 1.9.3. Measurement of Urine pH
- 1.10. Aspects to Consider in the Assessment of the Lithiasic Patient
 - 1.10.1. Urine-Related Factors
 - 1.10.1.1. Assessment of the Risk of Crystallization in the Urine
 - 1.10.1.2. Urine Composition
 - 1.10.1.3. Urine Volume
 - 1.10.1.4. Urinary pH
 - 1.10.1.5. Urodynamic Factors
 - 1.10.1.6. Criteria for the Existence of Risk of Crystallization in Urine
 - 1.10.1.7. Other Tools for Assessing the Risk of Crystallization of Urine
 - 1.10.2. Selection of Urine Samples
 - 1.10.3. Urinary Infection





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General Objectives

- Identify the fundamental physical and chemical aspects involved in the formation of kidney stones
- Delve into the classification of kidney stones according to the etiological factors that generate them
- Establish the diagnostic foundations based on the study of kidney stones
- Determine the key diagnostic aspects based on the study of urine
- Delve into the metabolic study of patients with renal lithiasis
- Define the classifications of patients at risk of urolithiasis, considering factors that may contribute to the formation of stones
- Assess the various associated metabolic conditions and their specific treatments
- Acquire a comprehensive approach to the dietary and clinical management of the lithiasic patient
- Address the etiology and pathophysiology of non-calcium lithiasis, identifying its distinctive characteristics
- Define the medical treatment options available for each type of condition
- Assess the role of genetics and microbiota in the management of Urolithiasis
- Establish guidelines for pH control and coordination of Urolithiasis units
- Evaluate renal physiology and pathophysiology, as well as the mechanisms of obstruction
- Delve into the most widely used diagnostic imaging methods in Renal Lithiasis
- Define therapeutic approaches to renal colic
- Identify the complications associated with lithiasis and propose management strategies based on international clinical guidelines

- Analyze the historical evolution of Extracorporeal Shock Wave Lithotripsy
- Assess the physical principles, types of energy and those of Extracorporeal Shock Wave Lithotripsy
- Examine the results, complications and post-procedure follow-up, as well as the latest advances in this technology
- Establish recommendations based on clinical guidelines and develop radiation protection strategies in the context of Endourology
- Analyze the historical evolution of endourology and its current applications, focusing on technological and surgical advances
- Examine renal and ureteral anatomy relevant to endourology, establishing its importance in the execution of procedures
- Assess the criteria for the selection of surgical techniques and energy sources in Endourology
- Identify the endourological approaches and specific equipment used in semirigid ureteroscopy
- Delve into the historical evolution of flexible ureteroscopy and its development
- Evaluate the standard and extended indications for Retrograde Intrarenal Surgery
- Examine the materials, surgical techniques and advanced technologies used in Retrograde Intrarenal Surgery
- Identify intraoperative and postoperative complications, establishing strategies for their prevention and management, with a focus on the application of ALARA principles
- Analyze the different patient positions in percutaneous nephrolithotomy



Teaching Objectives | 19 tech



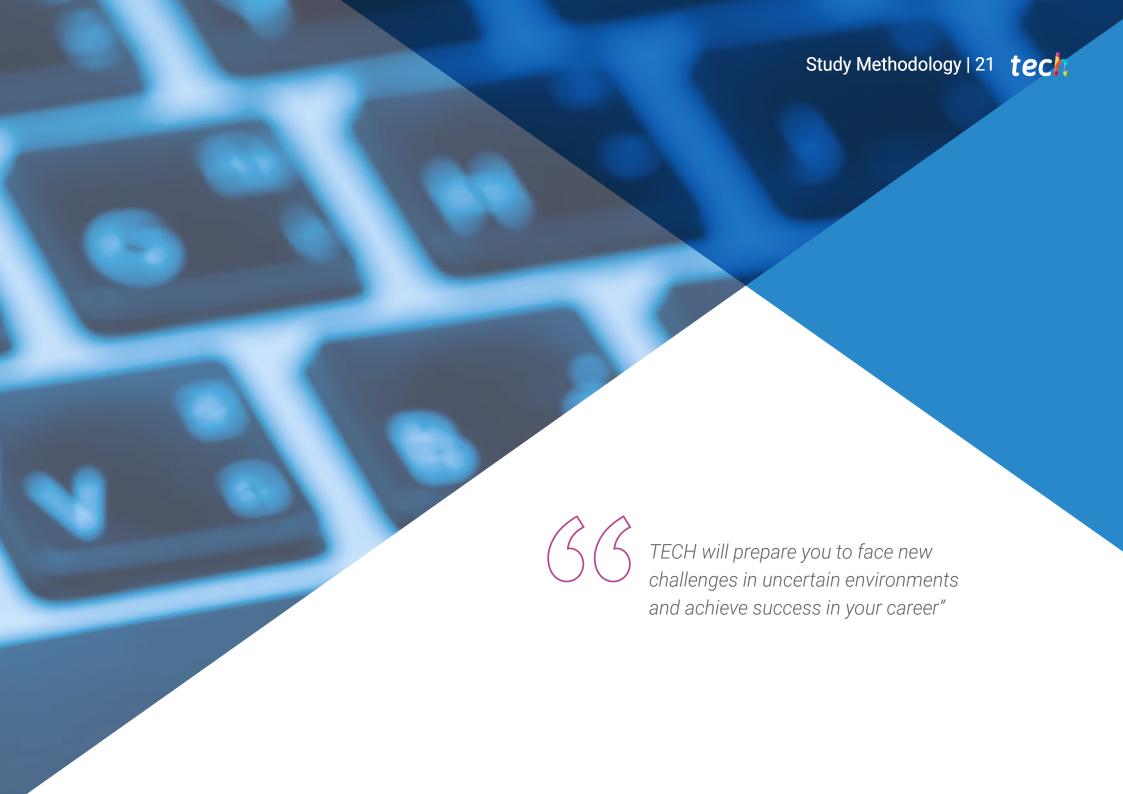
Specific Objectives

- Analyze the thermodynamic and kinetic aspects involved in the formation of kidney stones
- Identify the etiological aspects involved in the formation of each type of kidney stone
- Specify the appropriate stages and methodologies for the study of kidney stones
- Establish the fundamental aspects in the assessment of the risk of urinary crystallization



You will be able to download all the contents of this university program, such as multimedia material or explanatory videos, even after you have completed it"



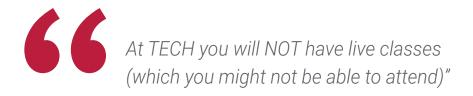


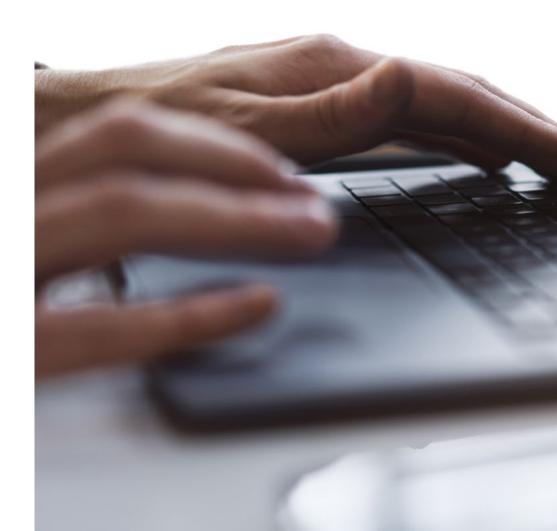
The student: the priority of all TECH programs

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.







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"

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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.

Study Methodology | 27 tech

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

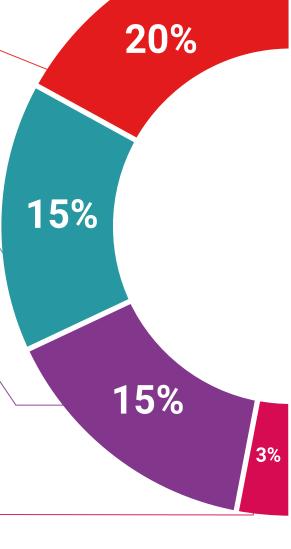
You will carry out activities to develop specific competencies and skills in each thematic field. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop within the framework of the globalization we live in.



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



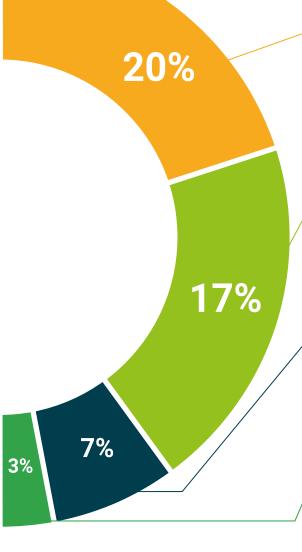
There is scientific evidence suggesting that observing third-party experts can be useful.

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.





For the design and delivery of this Postgraduate Certificate, TECH has gathered together the services of the top specialists in the field of Urology. These professionals have extensive work experience, having been part of the most prestigious healthcare institutions. They have therefore carried out multiple surgical operations to optimize the quality of life of patients with urologic conditions such as Renal Lithiasis. Thanks to their experience and comprehensive knowledge, graduates will enter an immersive experience that will allow them to stay at the forefront of the latest therapeutic advances for the treatment of Kidney Stones.

Management



Dr. Servera Ruiz de Velasco, Antonio

- Director of Endourology and Lithiasis at the Hospital of Manacor
- Urology Specialist at Juaneda Miramar Hospital
- Internship in Laparoscopic Pelvic and Retroperitoneal Surgery at Heidelberg University Hospital
- Scientific Researcher
- Director of 6 international Clinical Trials
- Internship in Robotic Surgery at the Institut Mutualiste Montsouris
- Internship in Laparoscopic and Percutaneous Surgery at the Italian Hospital of Buenos Aires
- PhD in Health Sciences from the University of the Balearic Islands
- Degree in Medicine and Surgery from the University of Zaragoza
- Member of the European College of Urology



Professors

Dr. Grases Freixedas, Feliciano

- Director of the Renal Lithiasis Research Laboratory at the University Institute of Health Sciences
- Director of the Renal Calculus Biobank
- Specialist in the field of Urology
- Scientific Researcher with 300 international publications and 5 books
- PhD in Medical Sciences with a specialization in Urology from the University of Barcelona
- Bachelor of Medicine from the University of Barcelona
- Full Member of the Royal Academy of Medicine of the Balearic Islands

Dr. Costa-Bauzá, Antonia

- Professor of Toxicology, Fundamental Biology and Health Sciences
- Researcher in Renal Lithiasis and Biomineralization at the University Institute of Health Sciences
- Author of the books "Crystallization in solution. Basic concepts" and "Kidney stones. *Types and prevention*
- Author of more than 170 specialized articles published in indexed journals
- Speaker at more than 220 scientific conferences on a national and global scale
- PhD in Chemical Sciences from the University of the Balearic Islands
- Member of the Renal Lithiasis Research Laboratory





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This private qualification will allow you to obtain a diploma for the **Postgraduate Certificate in Renal Lithiasis** 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 Renal Lithiasis

Modality: online

Duration: 6 weeks

Accreditation: 6 ECTS



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

Postgraduate Certificate in Renal Lithiasis

This is a private qualification of 180 hours of duration equivalent to 6 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



^{*}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.

tech global university

Postgraduate Certificate Renal Lithiasis

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