Master's Degree

Endodontics and Apical Microsurgery

tech global university

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Master's Degree

Endodontics and Apical Microsurgery

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

Website: **www.techtitute.com/us/dentistry/master-degree/master-endodontics-apical-microsurgery**

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01

Introduction

New technologies and the constant study of biomaterials has favored their use in dental clinic consultations. Its use is proving to be very effective in treatments such as regenerative endodontics, where the inflammation process is modulated and bone regeneration is achieved. The success of advances in this area is in turn due to continuous research and updating of knowledge on the part of dental professionals. This program, taught exclusively online, was created to provide specialists with the latest knowledge in this area thanks to a teaching team with extensive experience in this field.

This Master's Degree provides you with the most recent diagnostic and up-to-date treatment in the field of Endodontics and Apical Microsurgery"

The progress made in recent years in Endodontics and Apical Microsurgery is not the result of chance. The concept of innovation applied to the improvement of the quality of the patient's oral health has led to an important boost in the materials used, as well as to an improvement in endodontic treatments or in patients suffering from pulpo-periodontal pathologies. Likewise, thanks to the ability of dental professionals to spread the word, the population has become more aware of the importance of oral hygiene care for the prolongation of teeth and their general well-being.

In this context, TECH offers dentists a Master's Degree with which they can update their knowledge with the help of a specialized teaching team, who have developed an exhaustive syllabus on Endodontics and Apical Microsurgery. Through innovative multimedia content, the professional will learn about the modern concept of Endodontics and the different tools used for diagnosis and treatment.

In addition, throughout the 12 months of this university program, students will be provided with simulations of clinical cases, which will allow them to get even closer to the reality of surgery and microsurgery in Endodontics and to make appropriate decisions in the choice of root canals, retreatment or implant treatments.

A Master's Degree, which is an excellent opportunity for dentists who wish to expand their knowledge in a comfortable and 100% online format. In this way, students will only need an electronic device with an Internet connection to access the syllabus. This content will also be available to students right from the beginning and, therefore, will allow them to distribute the workload according to their needs. In this way, the dentist is faced with a quality education that is compatible with their professional and/or work responsibilities.

This **Master's Degree in Endodontics and Apical Microsurgery** contains the most complete and up-to-date scientific pr ogram on the market. The most important features include:

- Practical cases presented by experts in Endodontics and Apical Surgery
- 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 the self-assessment process can be carried out to improve learning
- 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

Deepen your understanding of the use of biomaterials as calcium ion generators from your own computer, whenever you choose"

The case studies provided by the specialized teaching team will allow you to update your knowledge of pulp canal pathologies"

Recycle your knowledge of the rubber dam application technique with a 100% online, flexible program that adapts to you.

This academic program gives you the opportunity to learn about the latest advances in root canal obturation techniques.

The program's teaching staff includes professionals from the sector who contribute their work experience to this 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 learning programmed to train in real situations.

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

02

Objectives

At the end of this university course, students will have gained knowledge about the most appropriate treatments and techniques according to the characteristics of the patient. In addition, they will be updated on the use of the latest biomaterials and protocols in dental traumatology. These goals will be possible thanks to the exhaustive syllabus and clinical cases provided by the specialized teaching staff that teaches this program.

TECH is all about you: give your career the boost it needs and specialize in Endodontics and Apical Miscrosurgery"

General Objectives

- Update the theoretical and practical knowledge of the dentist in the different areas of Endodontics and Apical Microsurgery, through evidence-based dentistry
- Promote work strategies based on a multidisciplinary approach to the patient who is a candidate for endodontic treatment or apical surgery
- Encourage the acquisition of technical skills and abilities, through a powerful audiovisual system, and the possibility of development through online simulation workshops and/or specific training
- Train the professional to reach levels of excellence based on the attentive observation of the patient and their circumstances, extraction of the appropriate clinical and exploratory data, elaboration of a diagnostic process and therapeutic plan that will lead them to offer the patient the best possible option in that situation. To this end, it will be essential to immerse yourself in the continuous study of the bibliography, acquiring solid foundations and a habit of periodically reviewing the evolution of your knowledge with a critical attitude and ability to discriminate

Specific Objectives

Module 1. The Modern Concept of Endodontics

- Describe the biological principles of Endodontics
- Perform a correct clinical history in endodontics, taking into account the risk diseases as well as the various radiological techniques available to us to make a correct diagnosis
- Explain the interrelationships of Endodontics with other areas of Dentistry

Module 2. Diagnosis, Treatment Plan and Dental Anesthesia

- Correctly prepare the surgical field in apical surgery as well as master the sterilization protocols
- Know the treatments for emergencies in Endodontics

Module 3. Opening, Location, and Morphology of the Root Canal System

- Perform the procedure for insulation by means of a rubber dam
- Know how to differentiate the different treatment options for open apex tooth

Module 4. Current Protocol in Canal Irrigation

- Define the different types of root resorptions
- Identify the main irrigation solutions and irrigation methods

Module 5. Biomechanical Preparation of the Root Canal

- Explain the anatomy and location of root canals
- Perform a correct conformation of the root canal system through the different techniques and instruments available to us
- Properly disinfect the root canal system using the different dispensing techniques and irrigation systems available to us

Module 6. Root Canal System Sealing
- Perform obturation of canals according to the appropriate technique for each clinical situation
- Perform endodontic retreatment by removing existing root anchors if necessary

Module 7. The Use of Calcium Hydroxide and its Ions in Current Dentistry
- Know the biomaterials as a current evolution towards calcium hydroxide
- Know the methods of pulp prevention in young molars and other teeth

Module 8. Dental trauma Diagnosis, Treatment and Prevention
- Solve possible operative accidents in Endodontics
- Describe dental traumatology in emergency situations

Module 9. Endodontic treatment of deciduous teeth
- Analyze pulp therapy for deciduous and permanent teeth diagnosed with healthy pulp or reversible pulpitis
- Gain in-depth knowledge on the treatment of radical conductors

Module 10. Pulpo-Periodontal Pathology and Endoperiodontal Relationships
- Perform a differential diagnosis between endodontic and periodontal lesions
- Identify endoperiodontal resorption lesions

Module 11. Retreatments
- Detect predisposing factors for post-treatment disease
- Gain in-depth knowledge of non-surgical clinical retreatment

Module 13. Surgery and Microsurgery in Endodontics
- Explain the indications for endodontic surgery
- Appropriately manage the flap and control bleeding

Module 14. Making Decisions Between Root Canal Treatment, Retreatment, Apical Surgery, or Implants
- Define the different techniques and agents when performing tooth whitening
- Detect the causes for tooth extraction

Module 15. Endodontics in Elderly Patients
- Perfect the clinical management of canal calcification and useful treatment considerations
- Know the different pathologies present in elderly patients

You will achieve your goals thanks to our tools and you will be accompanied along the way by leading professionals"

03

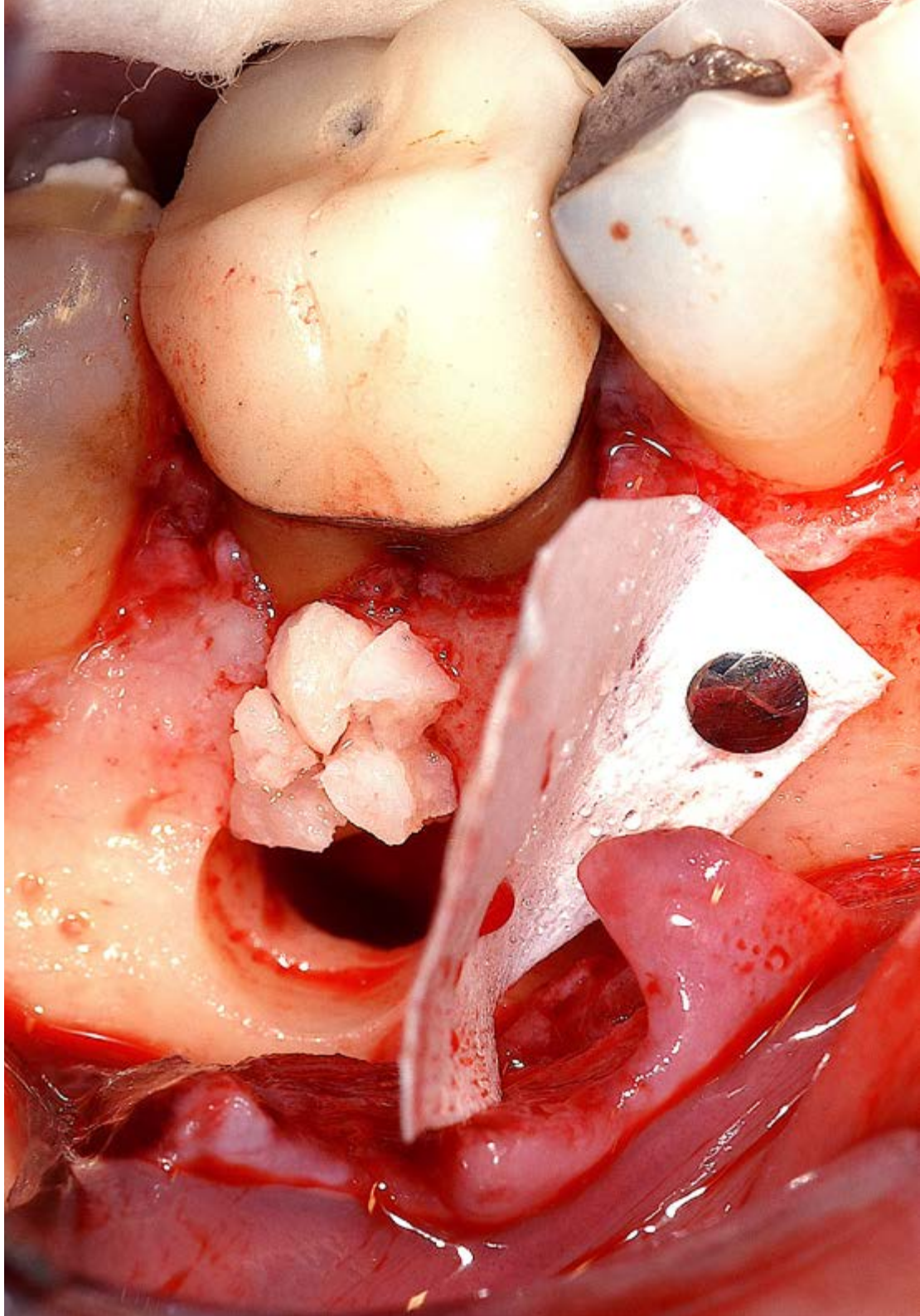
Skills

Thanks to this degree, the dental professional will be able to enhance their skills and abilities in the field of Endodontics and Apical Microsurgery.
The didactic tools provided by TECH will allow you to update your knowledge on the different techniques applied in the process of diagnosis and treatment of patients with problems of teeth loss.

A university education where you will have 24-hour access to the most exhaustive syllabus in Modern Dentistry"

General Skills

- Possess and understand knowledge in their field of study that builds on the foundation of general secondary education. While relying on advanced textbooks, it also includes some aspects that involve knowledge from the forefront of this field of study
- Apply their skills and abilities to their work in a professional manner and possess the abilities usually demonstrated through the development and defence of arguments and problem solving within their area of study
- Gather and interpret relevant data (usually within their area of study) to make judgments that include a reflection on relevant social, scientific or ethical issues
- Convey information, ideas, problems, and solutions to both specialized and non-specialized audiences
- Develop the learning skills necessary to undertake further studies with a high degree of autonomy



Specific Skills

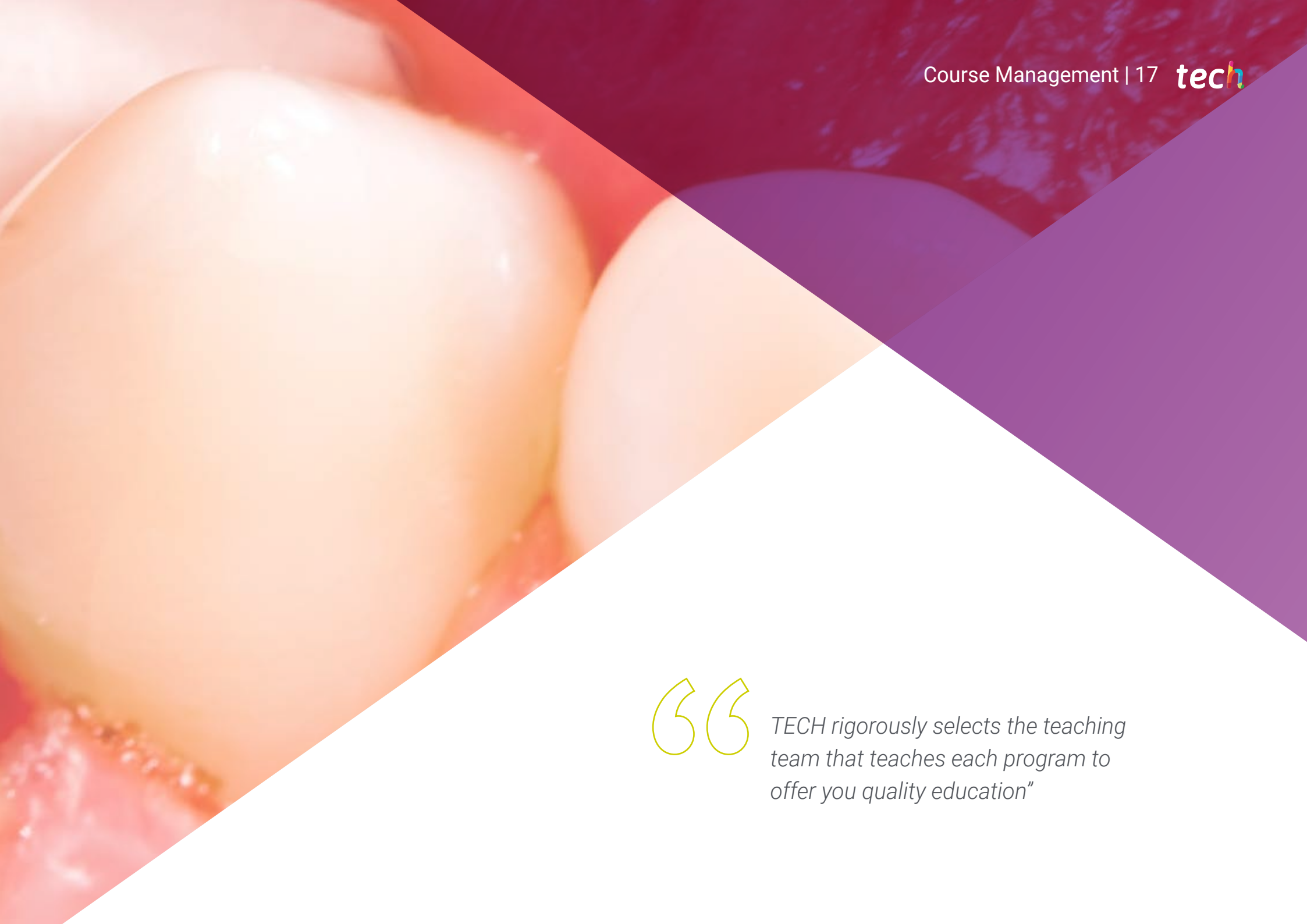
- Explain the evolution in Endodontics
- Describe the anatomy of root canals as applied to endodontics
- Perform data collection and examination of the patient for the preparation of a correct medical history
- Perform adequate dental management of patients at risk in Endodontics
- Know how to apply radiological techniques for endodontic diagnosis
- Perform the different access cavities according to the clinical situation
- Obtain a working length in our treatments according to the use of conventional Rx
- Know how to use EALs correctly
- Describe the biological principles of Endodontics
- Perform endodontic treatment of the open apex tooth
- Explain revascularization in Endodontics
- Apply the different duct shaping techniques
- Perform chemical cleaning of the root canals by activating the irrigants and of irrigants
- Perform canal obturation using thermoplastic techniques
- Perform removal of threaded metal poles, cast stubs, and fiberglass or carbon fiber poles using ultrasound
- Explain the system to be applied when removing a fractured instrument from the inside of the canal
- Describe the endodontic management of a case of dental traumatology
- Handle emergency situations in the event of an accident during endodontic surgery
- Apply incision techniques in apical surgery
- Perform retro-preparation and retro-obturation in apical surgery
- Apply their knowledge in regeneration in apical surgery
- Interrelate endodontics with other dental specialties
- Reconstruct endodontically-treated teeth, knowing that the use of intra-radicular anchors is not always necessary
- Perform laser teeth whitening
- Explain the importance of communication with the referrer

Make the most of the opportunity and take the step to get up-to-date on the latest developments in endodontics management"

04

Course Management

The dentist who takes this academic degree will have the support of a teaching team specialized in this area, with an extensive professional background in Endodontics and Apical Microsurgery and experience in high-level teaching. Their extensive knowledge is reflected in the syllabus that makes up this university program, where, in addition, students can count on a faculty that will resolve any questions that may arise about the content of the program.



TECH rigorously selects the teaching team that teaches each program to offer you quality education"

International Guest Director

Dr. Federico Foschi is an outstanding authority in the field of Endodontics and Oral Surgery. His doctorate, in collaboration with the prestigious Forsyth Institute of Boston in the United States, earned him the IADR Pulp Biology award for his contributions in the field of Endodontic Microbiology.

For more than two decades he has developed his practice in the United Kingdom. In that country he completed an exhaustive five-year training in Restorative Dentistry at Guy's Hospital in London. He has also maintained a constant practice based on Endodontic referral, root canal management, primary and secondary treatments and Apical Surgery.

Dr. Foschi has also collaborated as a consultant in different clinics where he continuously demonstrates his extensive knowledge of all aspects of oral health. He has also been associated as a research fellow with the Faculty of Dentistry, Oral and Craniofacial Sciences at King's College London and has served as director of academic programs on behalf of Health Education England. He has also been appointed Professor at the University of Plymouth.

This expert, who graduated from the University of Bologna with honors, has published 50 peer-reviewed articles, two book chapters and a volume of his own. Among other contributions, he has extensively investigated the source of "toothache" and participated in the development of a new method for the detection of bacteria during root canal treatment. A project thanks to which the failure of some treatments and the need for follow-ups could be reduced.

At the same time, Dr. Foschi is a member of the Higher Education Academy of the United Kingdom, as well as of the British Endodontic Society. He has also shared his therapeutic innovations at numerous congresses, making him a reference for dentists all over the world.

Dr. Foschi, Federico

- Consultant and academic collaborator at King's College London
- Consultant and academic collaborator at the University of Plymouth
- Director of the Endodontic Training Program at Health Education England
- PhD in Endodontic Microbiology at the Forsyth Institute, Boston, USA
- Degree in Dentistry from the University of Bologna
- Member of:
  - Higher Education Academy of the United Kingdom
  - Royal College of Surgeons of England
  - British Endodontic Society

Management

Dr. Fabra Campos, Hipólito

- Doctor of Medicine and Surgery, from the Complutense University of Madrid
- Degree in Medicine and Surgery
- Degree in Stomatology from the School of Stomatology at the Complutense University of Madrid
- Founding member of the Spanish Society of Endodontics

Dr. Baroni Cañizares, Luís

- Exclusive dedication in Endodontics at Dr. Ruiz de Gopegui Clinic
- Master's Degree teacher in Endodontics at the University of Zaragoza, Spain
- Degree in Dentistry from the European University of Madrid
- Official Master's Degree in Advanced Endodontics
- Full Member of the Spanish Association of Endodontics (AEDE)

Dr. García Rielo, Manuel Miguel

- USC Clinical Tutor Professor in the Dental Pathology and Therapeutics Teaching Unit
- Collaborating professor of the International Master's Degree in Advanced Endodontics at the USC School of Dentistry
- International Master's Degree in Advanced Endodontics
- Master's Degree in Implantology, Periodontics and Oral Surgery
- Degree in Dentistry from the University of Santiago de Compostela

05

Structure and Content

The syllabus of this Master's Degree has been developed by a teaching team whose main objective has been to contribute their extensive knowledge in the area of Endodontics and Apical Microsurgery through innovative multimedia content. Thus, the dentist will be able to use video summaries, detailed videos or interactive diagrams to update their knowledge in a more dynamic way. In addition, clinical case studies and specialized readings will complement the syllabus of this university program.

Innovative teaching tools will allow you to learn about the opening, location and morphology of the root canal system in a more visual way"

Module 1. The Modern Concept of Endodontics

1.1. Reviewing the Concept of Dentinal Canal, Cementary Canal and Pulp Stump, Pulp Cap, or Differentiated Apical Periodontium
- 1.1.1. Dentinal Canal
- 1.1.2. Cementary Canal
- 1.1.3. Pulp Stump, Pulp Cap, or Differentiated Apical Periodontium

1.2. Reviewing the Concept of Root Cementum, Apical Foramen, Periodontal Membrane, and Alveolar Bone
- 1.2.1. Cementodentinal Junction
- 1.2.2. Root Apex
- 1.2.3. Root Cement
- 1.2.4. Apical Foramen
- 1.2.5. Periodontal Membrane

Module 2. Diagnosis, Treatment Plan and Dental Anesthesia

2.1. Clinical Examination and Differential Diagnosis of Pulpal Pain
- 2.1.1. Introduction
- 2.1.2. Odontogenic Pain
- 2.1.3. Pulp and Periapical Diagnosis
- 2.1.4. Pulpal Pathology
- 2.1.5. Periapical Pathology

2.2. Conventional Radiological Exploration
- 2.2.1. Occlusal and Panoramic X-Rays
- 2.2.2. Interproximal and Periapical X-Rays
- 2.2.3. Structure Identification

2.3. Computerized Dental Radiography CBCT
- 2.3.1. Introduction
- 2.3.2. Diagnosis in Dentistry
- 2.3.3. CBCT
  - 2.3.3.1. Features of a CBCT
  - 2.3.3.2. Advantages of a CBCT
  - 2.3.3.3. Radiological Dose of a CBCT
  - 2.3.3.4. Voxels
  - 2.3.3.5. Limitations of a CBCT

2.3.4. CBCT in Endodontics
2.3.4.1. Determination and Localization of Ducts
2.3.4.2. Periapical Lesions
2.3.4.3. Dental Trauma
2.3.4.4. Root Resorptions
2.3.4.5. Pre-Surgical Planning
2.3.4.6. Diagnosis of Failures and Complications
2.3.4.7. The Use of CBCT
2.4. Treating Emergencies in Endodontics
2.4.1. Reversible and Irreversible Pulpitis
2.4.2. Necrosis
2.4.3. Acute Refractory Apical Periodontitis and Apical Abscess
2.5. Anesthetizing the Tooth to be Endodontized
2.5.1. Intraligament Anesthesia
2.5.2. Intraosseous Anesthesia and Self-Injected Anesthesia
2.5.3. Locoregional Anesthesia
2.5.4. Topical and Periapical Anesthesia

Module 3. Opening, Location, and Morphology of the Root Canal System

3.1. Access Cavities in Uniradicular Teeth and Access to the Root Canal System
3.1.1. Opening in the Central Incisors, Lateral Incisors, and Upper Canines
3.1.2. Opening in the Central Incisors, Lateral Incisors, and Lower Canines
3.1.3. Opening in Upper and Lower Premolars
3.2. Access Cavities in Molars and Access to the Root Canal System
3.2.1. Opening in Upper Molars
3.2.2. Opening in Lower Molars
3.3. Determination of Root Canal Characteristics
3.3.1. Canal Localization
3.3.2. Canal Permeabilization
3.3.3. Extraction and Cleaning of the Root Pulp
3.3.4. Determination of Working Length or Conductometry
3.4. The Rubber Dam
3.4.1. Staples, Staple Holder, Drill, and Dam Holder
3.4.2. The Different Types of Rubber Dam
3.4.3. Placement Techniques

Module 4. Current protocol in canal irrigation

4.1. Treatment Considerations on Irrigation in Vital and Necrotic Teeth (the Biofilm Concept)
4.1.1. Biopulpectomy Concept and Fundamental Principles
4.1.2. Necropulpectomy Concept and Fundamental Principles
4.2. Considerations on Irrigating Substances
4.2.1. Objectives of Irrigation
4.2.2. Fundamentals to Follow with Irrigants
4.2.3. Physical-Chemical Properties of Irrigants
4.3. Irrigation Solutions and Irrigation Methods
4.3.1. Sodium Hypochlorite, Chlorhexidine and Others
4.3.2. Simple Irrigation, with Aspiration, with Vibration or with Cavitation
4.4. Removing the Smear Layer and Performing the Apical Permeabilization (PATENCY)
4.4.1. Methods of Removing the Smear Layer. When and Why?
4.4.2. Methods of Permeabilizing. When and Why?

Module 5. Biomechanical Preparation of the Root Canal

5.1. New Concepts in the Design of Nickel Titanium (NiTi) Instruments
5.1.1. Superelasticity and Shape Memory
5.1.2. Morphological Characteristics of NiTi Rotary Instruments
5.1.3. Rotary Files Manual
5.2. Protocols for Manual Canal Preparation
5.2.1. Manual with Pulsation and Traction Maneuvers Only
5.2.2. Associated with the Use of Gates Burs
5.2.3. Manual Associated with the Use of Batt Burs
5.2.4. Manual Associated with Ultrasounds
5.2.5. Manual Associated with Titanium Files

5.3. Protocols for Manual and Mechanical Canal Preparation
- 5.3.1. Standardization Rules
- 5.3.2. Characteristics of Rotary Systems
- 5.3.3. Manual Technique Associated with Mechanics
- 5.3.4. Initial Canal Permeabilization
- 5.3.5. Ductometry
- 5.3.6. Oval or Laminated Ducts
- 5.3.7. Work Systematics

5.4. Protocols in Mechanical Canal Preparation
- 5.4.1. Mechanical Technique for Canal Preparation
- 5.4.2. Hypothesis: Types and Characteristics
- 5.4.3. Handling of ducts according to their difficulty
- 5.4.4. Clinical Criteria for Canal Instrumentation

5.5. Causes and Prevention in Rotary Instruments Breakage
- 5.5.1. Causes of Instrument Breakage
- 5.5.2. Clinical Causes
- 5.5.3. Metallographic Causes
- 5.5.4. Prevention of Instrument Breakage
- 5.5.5. Mandatory Standards

Module 6. Root canal system sealing

6.1. One or More Sessions in Endodontics
- 6.1.1. Compilation of the Surgical Procedure
- 6.1.2. Requirements That Must Be Met in Order to Perform Endodontics in One Session
- 6.1.3. Drying and Dentin Preparation Prior to Sealing

6.2. Canal Sealing Materials
- 6.2.1. Gutta-Percha Tips
- 6.2.2. Classic Sealing Cements
- 6.2.3. Sealing Biocements

6.3. Technique of Obturation with Gutta-Percha Tips (Lateral Condensation). Part I. General Conditions
- 6.3.1. Gutta-Percha Tips and Ergonomics in the Technique
- 6.3.2. Types of Spacers and Calipers
- 6.3.3. Placing Sealing Cement
- 6.3.4. Work Systematics

6.4. Technique of Obturation with Gutta-Percha Tips (Lateral Condensation). Part II. Specific Considerations
- 6.4.1. Specifications on the Lateral Condensation Technique
- 6.4.2. Combined Technique of Lateral and Vertical Condensation with Heat
- 6.4.3. Apical Sealing with Lateral Condensation
- 6.4.4. Management of Occlusion After Endodontics

6.5. Materials and Techniques of Obturation with Thermoplasticized Gutta-Percha (Vertical Condensation with Hot Gutta-Percha)
- 6.5.1. Introduction
- 6.5.2. Considerations on the Classic Schilder Technique
- 6.5.3. Considerations on the "McSpadden" Technique and the "Hybrid Tagger Technique"
- 6.5.4. Considerations on Buchanan's Continuous Wave Condensation Technique
- 6.5.5. Considerations on the Technique of Direct Injection of Thermoplasticized Gutta-Percha
- 6.5.6. Considerations on the Technique of Canal Obturation with Resin Cement Sealant after Acid Etching of the Canal Walls

6.6. Materials and Techniques for Obturation with Thermoplasticized Gutta-percha (Thermafil® System and Others)
- 6.6.1. Considerations on the Technique of Direct Injection of Thermoplasticized Gutta-percha with Previous MTA Apical Plug
- 6.6.2. Technical Considerations of the Thermafil and/or Guttacore® System
- 6.6.3. Technical Considerations for the GuttaFlow System
- 6.6.4. Considerations on the Use of Expandable Polymer Tips

6.7. Apical Sealing as the Objective of Treatment. Scarring and Apical Remodeling
- 6.7.1. Technical and Biological Techniques of Obturation
- 6.7.2. Concepts of Overextension, Overfilling and Underfilling
- 6.7.3. The Concept of Permeabilization and Apical Puff
- 6.7.4. Sealing and Obturation of the Two Coronal Thirds of the Canal and of the Occlusal Cavity
- 6.7.5. Remodeling of the Root Apex

6.8. Postoperative Pain Management and Final Patient Information
- 6.8.1. Inflammatory Reactivation
- 6.8.2. What to Do in Case of Inflammatory Reactivation or "Flare-Up"
- 6.8.3. What Can Be Done to Prevent Inflammatory Reactivation or "Flare-Up"?
- 6.8.4. Is the Tooth Milled to Free it from Occlusion or Is It Left as It Is?

Module 7. The Use of Calcium Hydroxide and its Ions in Current Dentistry

7.1. Is Calcium Hydroxide an Obsolete Product?
- 7.1.1. Calcium Hydroxide in Solution, Suspension, and Paste
- 7.1.2. Calcium Hydroxide Combined with Other Substances
- 7.1.3. Calcium Hydroxide as Cement

7.2. Methods of Pulp Prevention in Young Molars and Other Teeth
- 7.2.1. Indirect Pulp Protection
- 7.2.2. Direct Pulp Protection
- 7.2.3. Pulp Curettage, Pulpotomy or Partial Pulpectomy

7.3. Biomaterials as a Current Evolution towards Calcium Hydroxide
- 7.3.1. Biomaterials as Calcium Ion Generators
- 7.3.2. Use and handling of biomaterials

7.4. Uses of Calcium Hydroxide to Treat Pathologies and Other Intraduct Medications
- 7.4.1. Calcium Hydroxide Used as an Antibacterial
- 7.4.2. Calcium Hydroxide Used as a Repair Inducer
- 7.4.3. Calcium Hydroxide Used as a Sealer
- 7.4.4. Intra-duct Medication and its Role

7.5. Uses of Biomaterials to Solve the Same Pathologies
- 7.5.1. Biomaterials Used as Pulp Protectors
- 7.5.2. Biomaterials Used as Repair Cements
- 7.5.3. Biomaterials Used as Sealing Materials

Module 8. Dental trauma Diagnosis, prognosis, and treatment

8.1. Trauma Patient
- 8.1.1. Epidemiology, Etiology, and Prevention
- 8.1.2. Injury-Related Questionnaire
- 8.1.3. Clinical Examination
- 8.1.4. Radiographical Examination

8.2. Permanent Tooth Trauma
- 8.2.1. Periodontal Injuries
- 8.2.2. Concussion
- 8.2.3. Subluxation
- 8.2.4. Intrusion
- 8.2.5. Lateral Luxation
- 8.2.6. Extrusion
- 8.2.7. Avulsion
- 8.2.8. Alveolar Fracture
- 8.2.9. Dental Structure Injury
- 8.2.10. Crown Fracture
- 8.2.11. Root-Crown Fracture
- 8.2.12. Root Fracture
- 8.2.13. Gum Injury
- 8.2.14. Laceration
- 8.2.15. Contusion
- 8.2.16. Laceration
- 8.2.17. Abrasion

8.3. Primary Tooth Trauma
- 8.3.1. General Considerations in DT in Primary Teeth
- 8.3.2. Clinical Evaluation and Treatment of Tooth Structure in Primary Teeth
- 8.3.3. Crown Fractures Without Pulp Exposure
- 8.3.4. Crown Fractures with Pulp Exposure
- 8.3.5. Root-Crown Fracture
- 8.3.6. Root Fracture
- 8.3.7. Clinical Evaluation and Treatment of the Supporting Structure in Primary Dentition
- 8.3.8. Concussion and Subluxation
- 8.3.9. Intrusion
- 8.3.10. Lateral Luxation
- 8.3.11. Extrusion
- 8.3.12. Avulsion
- 8.3.13. Alveolar Fracture

Module 9. Endodontic treatment of deciduous teeth

9.1. Considerations on Deciduous and Young Permanent Teeth
9.2. Pulp therapy for deciduous and permanent teeth diagnosed with healthy pulp or reversible pulpitis
  9.2.1. Indirect Pulp Coating
  9.2.2. Direct Pulp Coating
  9.2.3. Pulpotomy
9.3. Pulp therapy for deciduous and permanent teeth diagnosed with irreversible pulpitis or pulp necrosis
  9.3.1. Root Canal Treatment (Pulpectomy)
  9.3.2. Apex Formation
9.4. Regenerative Therapy. The Role of Stem Cells

Module 10. Pulpo-Periodontal Pathology and Endoperiodontal Relationships

10.1. Differential diagnosis between lesions of endodontic and periodontal origin
  10.1.1. General Considerations
  10.1.2. The Pulpo-Periodontal Communication Pathways
  10.1.3. Symptomatology and Diagnosis of Endo-Periodontal Syndrome
  10.1.4. Sport Injuries Classification
10.2. Endoperiodontal Lesions Due to Root Abnormalities. Part I
  10.2.1. General Considerations
  10.2.2. Combined Injuries: Diagnosis
  10.2.3. Combined Injuries: Treatment
10.3. Endoperiodontal Lesions Due to Root Abnormalities. Part II
  10.3.1. Pure Periodontal Lesions: Diagnosis
  10.3.2. Pure Periodontal Lesions: Treatment
  10.3.3. Conclusions
  10.3.4. Other Treatment Options
10.4. Cracked Tooth Syndrome and Root Bursting. Part I
  10.4.1. Crown Fracture without Pulp Involvement
  10.4.2. Crown Fracture with Pulp Involvement
  10.4.3. Crown Fracture with Pulp and Periodontal Involvement
  10.4.4. Root Burst in an Endodontically Treated Tooth
10.5. Cracked Tooth Syndrome and Root Bursting. Part II
  10.5.1. Root Fracture Due to Excess Pressure or Root Brittleness
  10.5.2. Root Fracture Due to Excessive Canal Widening
  10.5.3. Fracture due to Excessive Occlusal Contact or Overloading
10.6. Endoperiodontal Damage Due to Accidents and Trauma
  10.6.1. Crown-Root Fractures
  10.6.2. Vertical and Horizontal Root Fractures
  10.6.3. Contusion, Dental Luxation and Fracture of the Alveolar Process
  10.6.4. Treatment of Alveolar-Dental Lesions
10.7. Endoperiodontal Resorption Lesions. Part I
  10.7.1. Resorption due to Pressure
  10.7.2. Resorption due to Pulp Inflammation or Internal Resorption
  10.7.3. Non-Perforated Internal Resorption
  10.7.4. Perforated Internal Resorption
  10.7.5. Resorption Due to Periodontal Inflammation
  10.7.6. Inflammatory
  10.7.7. Replacement, by Substitution or Ankylosis
  10.7.8. Cervical Invasive
10.8. Endoperiodontal Resorption Lesions. Part II
  10.8.1. Invasive Cervical Resorption in Endodontically Treated Teeth
  10.8.2. Invasive Cervical Resorption without Pulp Involvement
  10.8.3. Etiology and Prognosis of Cervical Resorption
  10.8.4. Materials Used for the Treatment of Cervical Resorption
10.9. Periodontal Problems Related to Endodontic Surgery in Radicectomies, Hemisections, and Bicuspidations
  10.9.1. Radisectomy or Root Amputation
  10.9.2. Hemisection
  10.9.3. Bicuspidization

Module 11. Retreatments

11.1. What is the Cause of Failure of an Endodontically Treated Tooth?
- 11.1.1. Persistent or Secondary Endodontic Infections
- 11.1.2. Microbiology in the Root Filling Phase

11.2. Diagnosing Endodontic Failure
- 11.2.1. Clinical Evaluation of Root Canal Treatment
- 11.2.2. Radiographic Evaluation of Root Canal Treatment
- 11.2.3. Acceptable, Questionable, and Radiographically Unacceptable Root Canal Treatment
- 11.2.4. Diagnosing Apical Periodontitis with Cone Beam Computed Tomography (CBCT)
- 11.2.5. The Role of the Optical Microscope when We Need to Retreat a Tooth
- 11.2.6. Integration of Evaluative Factors in Determining the Outcome of Root Canal Treatment

11.3. Predisposing Factors for Post-Treatment Disease
- 11.3.1. Preoperative Factors that May Influence the Outcome of Root Canal Treatment
- 11.3.2. Intraoperative Factors that May Influence the Outcome of Root Canal Treatment
- 11.3.3. Postoperative Factors that May Influence the Outcome of Root Canal Treatment

11.4. Non-Surgical Clinical Retreatment
- 11.4.1. Preparing the access cavity
- 11.4.2. The use of ultrasound
- 11.4.3. Crown removal
- 11.4.4. Removal of bolts and/or posts
- 11.4.5. Rotosonic VIbration
- 11.4.6. Ultrasound
- 11.4.7. Mechanical Option
- 11.4.8. Access to the Root Third
- 11.4.9. Gutta-Percha Solvents
- 11.4.10. Gutta-percha removal techniques
- 11.4.11. Hedstroem Filing Technique
- 11.4.12. Techniques with Rotary Files
- 11.4.13. Removal via ultrasound
- 11.4.14. Removal via heat
- 11.4.15. Removal via preheated instruments
- 11.4.16. Removal with files, solvents, and paper cones
- 11.4.17. Paste removal
- 11.4.18. Single cone Gutta-percha removal with solid stem
- 11.4.19. Silver tip removal
- 11.4.20. Removal of broken instruments

Module 12. Endodontic Problems and Complications in Endodontics

12.1. Uncommon Root Anatomy in Different Teeth of the Dental Arch
- 12.1.1. Variations in the Root Anatomy of the Maxillary Incisors and Canines
- 12.1.2. Variations in the Root Anatomy of the Maxillary Premolars
- 12.1.3. Variations in the Root Anatomy of the Mandibular Incisors and Canines
- 12.1.4. Variations in the Root Anatomy of the Mandibular Premolars

12.2. Etiopathogenesis of Large Periapical Lesions and their Treatment in a Single Session
- 12.2.1. Anatomopathological diagnosis of granuloma
- 12.2.2. Anatomopathological Diagnosis of Cysts. Odontogenic Cysts
- 12.2.3. Bacteriological Considerations for Performing Endodontic Treatment of Large Periapical Lesions in a Single Session
- 12.2.4. Clinical Considerations for Performing Endodontic Treatment of Large Periapical Lesions in a Single Session
- 12.2.5. Clinical considerations on the Management of Fistulous Processes Associated with a Large Periapical Lesion

12.3. Treatment of Large Periapical Lesions in Multiple Sessions
- 12.3.1. Differential Diagnosis, Chamber Opening, Permeabilization, Cleaning, Disinfection, Apical Permeabilization, and Canal Drying
- 12.3.2. Intra-duct Medication
- 12.3.3. Temporary Crown Obutration (To Close or Not to Close, That is the Question)
- 12.3.4. Catheterization of the Fistulous Tract or Perforation of the Granuloma and Blind Scraping of the Apical Lesion of the Tooth
- 12.3.5. Guidelines for a Regulated Approach to a Large Periapical Lesion

12.4. Evolution in the Treatment of Large Periapical Lesions in Several Sessions
- 12.4.1. Positive Evolution and Treatment Control
- 12.4.2. Uncertain Evolution and Treatment Control
- 12.4.3. Negative Evolution and Treatment Control
- 12.4.4. Considerations on the Cause of Failure in the Conservative Treatment of Large Periapical Lesions
- 12.4.5. Clinical Considerations on Fistulous Processes in Relation to the Tooth of Origin

12.5. Location, Origin, and Management of Fistulous Processes
- 12.5.1. Fistulous Tracts Originating from the Anteroinferior Group
- 12.5.2. Fistulous Tracts Originating from the Maxillary Molars and Premolars
- 12.5.3. Fistulous Tracts Originating from the Anteroinferior Group
- 12.5.4. Fistulous Tracts Originating from the Mandibular Molars and Premolars
- 12.5.5. Cutaneous Fistulas of Dental Origin

12.6. The Problems of Maxillary First and Second Molars in Endodontic Treatment. The 4th Canal
- 12.6.1. Anatomical Considerations of the Maxillary First Molars of Children or Adolescents
- 12.6.2. Anatomical Considerations of Adult Maxillary First Molars
- 12.6.3. The Mesiobuccal Root in the Maxillary First Molars. The 4th Canal or Mesio-Vesticulo-Palatine Canal and the 5th Canal
  - 12.6.3.1. Ways to Detect the 4th Canal: See it Bleeding
  - 12.6.3.2. Ways to Detect the 4th Canal: See its Entrance
  - 12.6.3.3. Ways to Detect the 4th Canal: Tactilely with Manual File
  - 12.6.3.4. Ways to Detect the 4th Canal: Using an Optical Microscope with Magnified Vision
  - 12.6.3.5. Ways to Detect the 4th Canal: Tactilely with Mechanical File
- 12.6.4. The Distobuccal Root in the Maxillary First Molars
- 12.6.5. The Palatal Root in the Maxillary First Molars

12.7. The Problems of Mandibular First and Second Molars in Endodontic Treatment. 3 Ducts in the Mesial Root or the Intermediate Canal
- 12.7.1. Anatomical Considerations of the Mandibular First Molars of Children or Adolescents
- 12.7.2. Anatomical Considerations of Adult Mandibular First Molars
  - 12.7.2.1. The Mesial Root in the Mandibular First Molars
  - 12.7.2.2. The Distal Root in the Mandibular First Molars
- 12.7.3. Mandibular Molars with 5 Ducts
- 12.7.4. Anatomical Considerations of Adult Mandibular Second Molars
  - 12.7.4.1. C-Shaped Canal
  - 12.7.4.2. Molars with a Single Canal
- 12.7.5. Anatomical Considerations of the Mandibular Wisdom Teeth

Module 13. Surgery and Microsurgery in Endodontics

13.1. Surgical or Non-Surgical Retreatment. Decision Making
- 13.1.1. Endodontic Surgery
- 13.1.2. Non-Surgical Retreatment
- 13.1.3. Surgical Technique

13.2. Basic Instruments
- 13.2.1. Scanning Tray
- 13.2.2. Anesthesia Tray
- 13.2.3. Rotary Instruments
- 13.2.4. Types of Endodontic Files

13.3. Simple incisions for access to the operative site
- 13.3.1. Incision Through the Gingival Sulcus
- 13.3.2. Gingival Flap
- 13.3.3. Triangular Flap
- 13.3.4. Trapezoidal Flap
- 13.3.5. Modified Semilunar Incision
- 13.3.6. Semilunar Incision

13.4. Managing the flap and controlling bleeding
- 13.4.1. Design of the Flap
- 13.4.2. Surgical Complication
- 13.4.3. General Considerations

13.4.4. Presurgical Considerations for Controlling Bleeding
13.4.5. Surgical Considerations for Controlling Bleeding
13.4.6. Local Anesthesia
13.4.7. Design and Elevation of the Flap
13.5. Techniques and Materials Used for Retropreparation and Retro-Obturation
13.5.1. Mineral Trioxide Aggregate (MTA)
13.5.2. Endodontic Application of MTA
13.5.3. Paraendodontic Surgery
13.5.4. Properties of MTA
13.5.5. Biodentine
13.6. Ultrasonic Tips and Optical Microscope as Essential Equipment
13.6.1. Types of Tips
13.6.2. Optical Microscope
13.6.3. Surgical Microscope
13.6.4. Appropriate Use of Instruments
13.6.5. Ultrasonic Devices and Designed Tips
13.7. The Maxillary Sinus and Other Anatomical Structures With Which We Can Interact
13.7.1. Neighboring Anatomical Structures
13.7.2. Maxillary Sinus
13.7.3. Inferior Alveolar Nerve
13.7.4. Mental Foramen
13.8. Medication and Recommendations for Optimal Postoperative Care

Module 14. Making decisions between root canal treatment, retreatment, apical surgery, or implant

14.1. Treat the Tooth or Extract It?
14.1.1. Reasons to Extract a Tooth
14.1.2. Factors to Consider for Maintaining a Tooth?
14.2. Interrelation Between Endodontics and Implants
14.2.1. Endodontic-Implant Pathology
14.2.2. Classification of Endodontic-Implant Pathology
14.2.3. Diagnosis of Endodontic-Implant pathology
14.2.4. Treatment of Endodontic-Implant Pathology
14.2.5. Prevention of Endodontic-Implant Pathology

Module 15. Endodontics in Elderly Patients

15.1. Involution of Dental Structures and Regressive Pulp Alterations. Physiologic and Pathologic Pulp Canal Obliteration
15.1.1. Physiological Calcium Degeneration
15.1.2. Pathologic Calcium Degeneration
15.2. Calcium Metamorphosis, Dystrophic Calcification or Calcification of the Pulp of the Canal due to Trauma
15.2.1. No Dental Pathology and Crown Discoloration
15.2.2. Periapical Pathology Associated With Calcification of the Canal Without Discoloration of the Tooth
15.2.3. Periapical Pathology Associated With Calcification of the Canal and Discoloration of the Tooth
15.2.4. Clinical Management of Canal Calcification and Useful Treatment Considerations

06

Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning.**

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.

Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

At TECH we use the Case Method

In a given situation, what should a professional do? Throughout the program, students will face multiple simulated clinical cases, based on real patients, in which they will have to do research, establish hypotheses, and ultimately resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time.

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

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

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

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

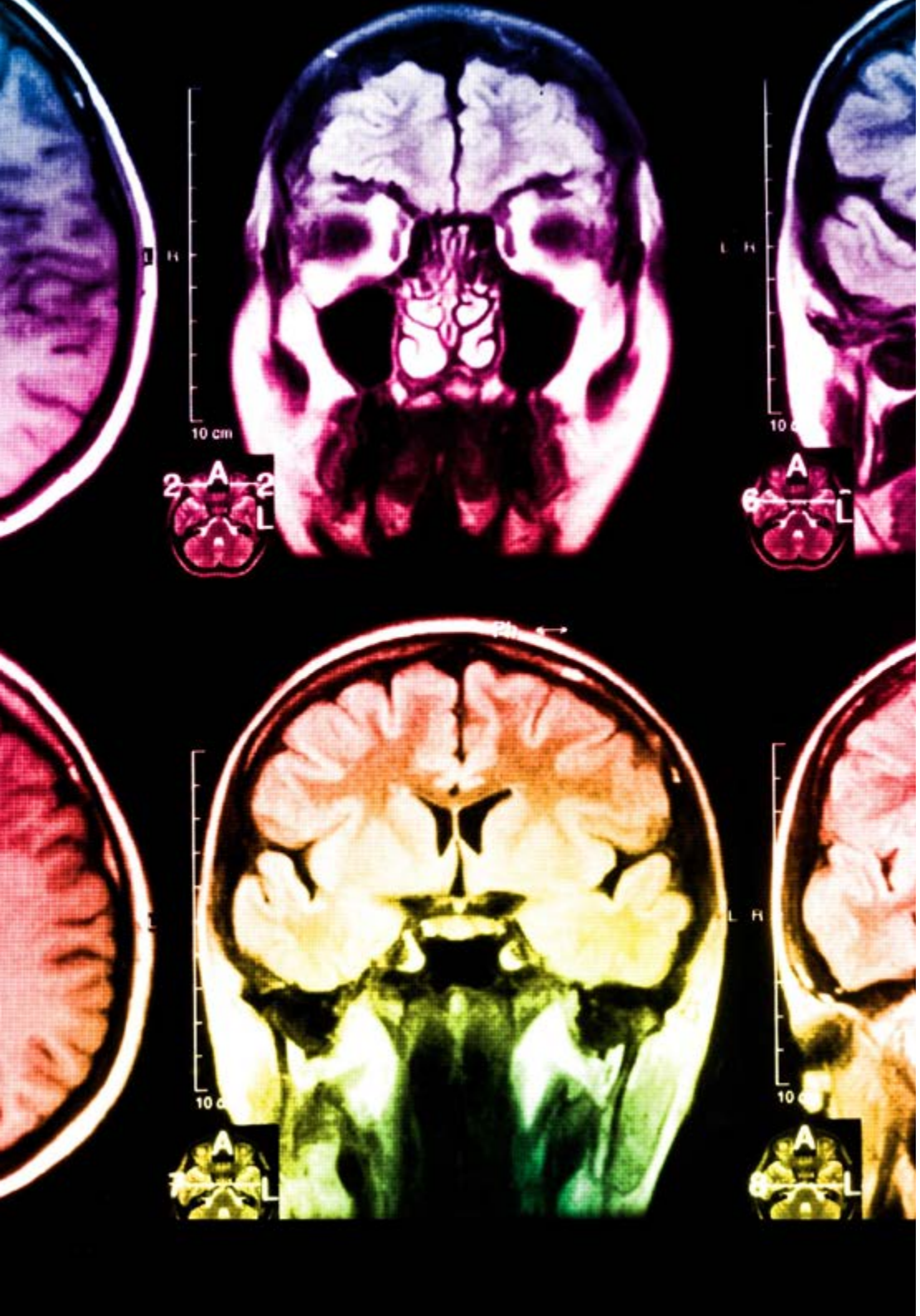
1. Dentists who follow this method not only grasp concepts, but also develop their mental capacity by means of exercises to evaluate real situations and apply their knowledge.
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.

Relearning Methodology

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

This university is the first in the world to combine the study of clinical cases with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, a real revolution with respect to the mere study and analysis of cases.

The student will learn through real cases and by solving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.



At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

With this methodology we have trained more than 115,000 dentists with unprecedented success, in all specialties regardless of the workload. Our pedagogical methodology is developed in a highly competitive environment, with a university student body with a strong socioeconomic profile and an average age of 43.5 years old.

Relearning will allow you to learn with less effort and better performance, involving you more in your training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for success.

In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and relearn). Therefore, we combine each of these elements concentrically.

The overall score obtained by TECH's learning system is 8.01, according to the highest international standards.

This program offers the best educational material, prepared with professionals in mind:

Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.

Educational Techniques and Procedures on Video

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

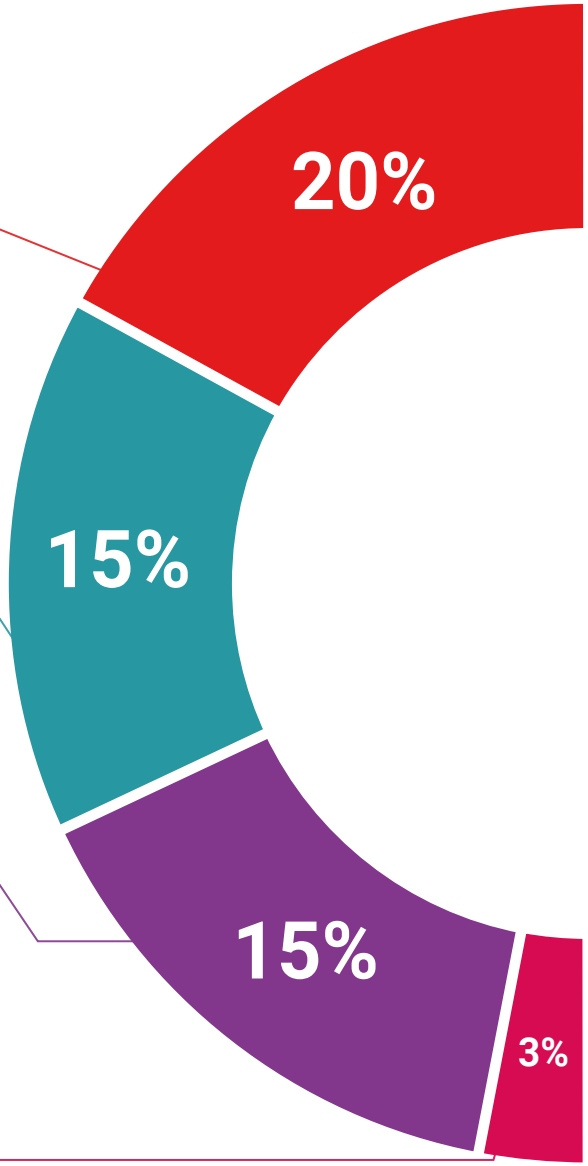
Interactive Summaries

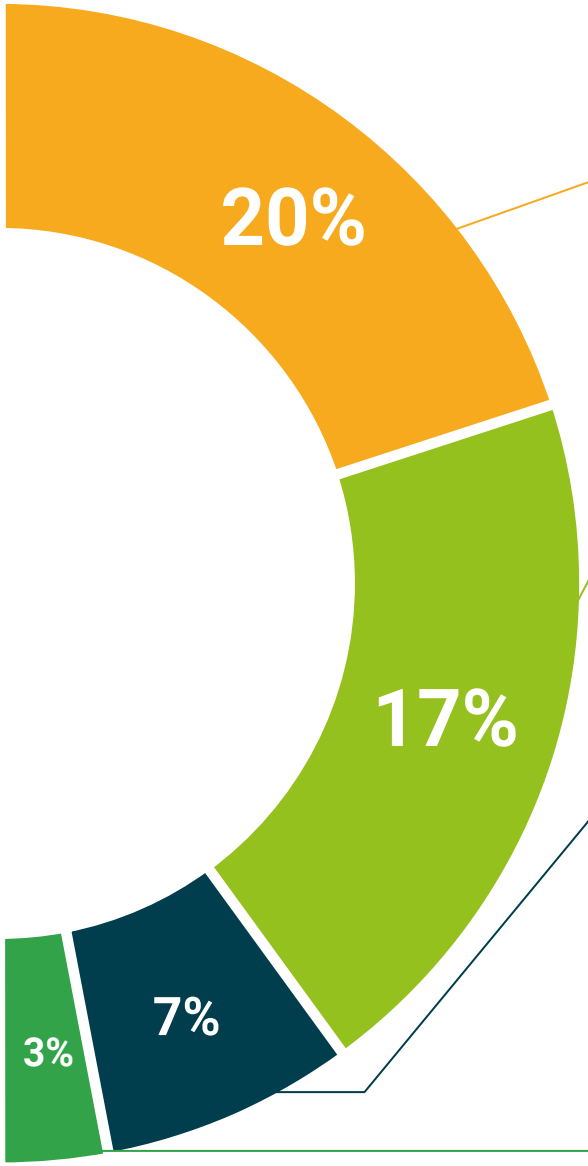
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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

Additional Reading

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





Expert-Led Case Studies and Case Analysis

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

Testing & Retesting

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

Classes

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

Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

Quick Action Guides

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

07

Certificate

The Master's Degree in Endodontics and Apical Microsurgery guarantees you, in addition to the most rigorous and updated training, access to a Master's Degree issued by TECH Global University.

Successfully complete this program and receive your university degree without travel or laborious paperwork”

This program will allow you to obtain your **Master's Degree diploma in Endodontics and Apical Microsurgery** endorsed by **TECH Global University**, the world's largest online university.

TECH Global University is an official European University publicly recognized by the Government of Andorra (***official bulletin***). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

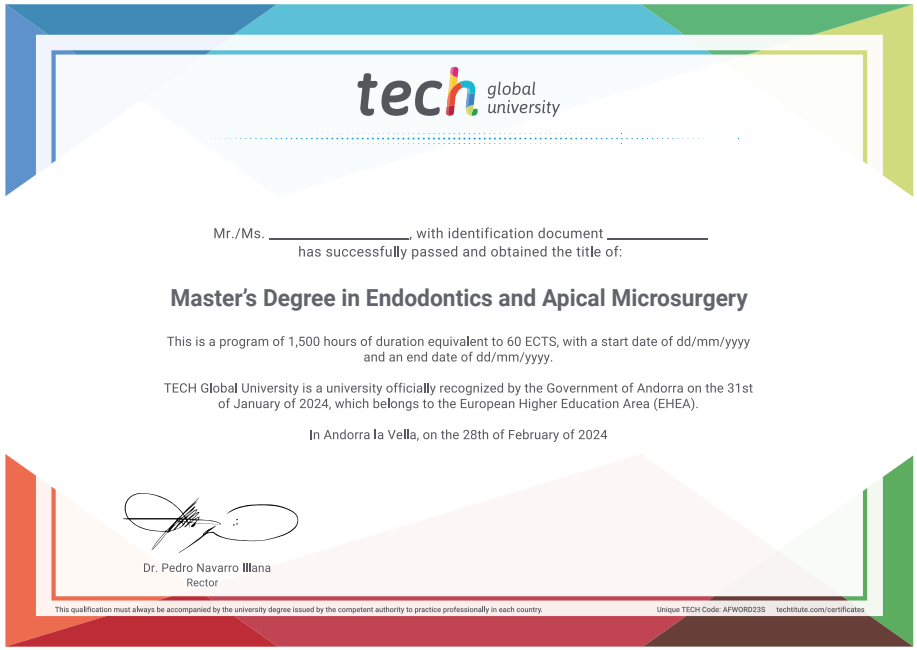
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Master's Degree in Endodontics and Apical Microsurgery**

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 Endodontics and Apical Microsurgery

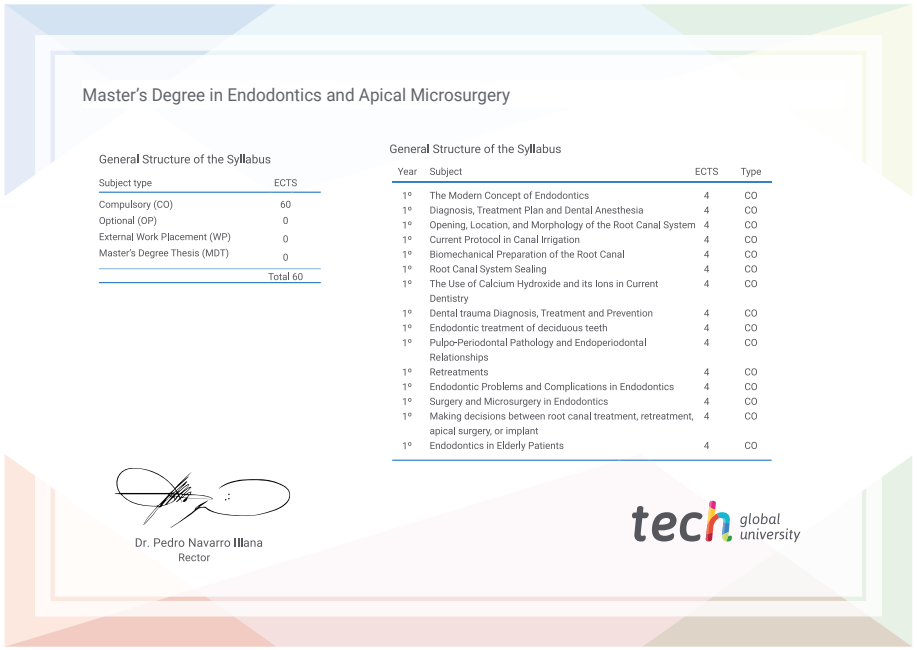
This is a program of 1,500 hours of duration equivalent to 60 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

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
Rector

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 Endodontics and Apical Microsurgery

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	The Modern Concept of Endodontics	4	CO
1º	Diagnosis, Treatment Plan and Dental Anesthesia	4	CO
1º	Opening, Location, and Morphology of the Root Canal System	4	CO
1º	Current Protocol in Canal Irrigation	4	CO
1º	Biomechanical Preparation of the Root Canal	4	CO
1º	Root Canal System Sealing	4	CO
1º	The Use of Calcium Hydroxide and its Ions in Current Dentistry	4	CO
1º	Dental trauma Diagnosis, Treatment and Prevention	4	CO
1º	Endodontic treatment of deciduous teeth	4	CO
1º	Pulpo-Periodontal Pathology and Endoperiodontal Relationships	4	CO
1º	Retreatments	4	CO
1º	Endodontic Problems and Complications in Endodontics	4	CO
1º	Surgery and Microsurgery in Endodontics	4	CO
1º	Making decisions between root canal treatment, retreatment, apical surgery, or implant	4	CO
1º	Endodontics in Elderly Patients	4	CO

Dr. Pedro Navarro Illana
Rector

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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

Endodontics and Apical Microsurgery

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

Master's Degree

Endodontics and Apical Microsurgery

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