

# Advanced Master's Degree Thoracic Oncology and Cardio-Oncology



## Advanced Master's Degree Thoracic Oncology and Cardio-Oncology

- » Modality: online
- » Duration: 2 years
- » Certificate: TECH Global University
- » Credits: 120 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/medicine/advanced-master-degree/advanced-master-degree-thoracic-oncology-cardio-oncology](http://www.techtute.com/us/medicine/advanced-master-degree/advanced-master-degree-thoracic-oncology-cardio-oncology)

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# 01

# Introduction

The incidence of cancer is one of the most important health problems we face today. Its study requires the highest level of specialization and, above all, constant and exhaustive updating to keep abreast of the advances that medical science and technology are constantly offering.

Among the possible types of cancer, lung cancer is the cancer with the highest mortality rate in men, while in women it is the fourth most frequent and the second in terms of mortality.

On the other hand, cardiac toxicity (CT) appears in up to 30% of the millions of patients who are treated today for oncological processes. This is a "serious complication that usually manifests as heart failure and negatively affects the prognosis" of patients.





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*This Advanced Master's Degree is an incredible opportunity to obtain in a single educational path, each and every one of the competences necessary to develop a totally updated intervention in Thoracic Oncology and Cardio-Oncology of total quality”*

Today, to speak of oncology is to speak of multidisciplinary teams. Not losing this multidisciplinary vision is very important because many advances in one area can have implications in the diagnostic and therapeutic algorithms used in oncology. In fact, one of the skills that we aim for students to achieve with this Advanced Master's Degree is to have a broad and clear vision of oncology, and to use the comparison of scientific advances in each area as a tool that will allow them to advance their knowledge.

We could give many examples, but for the sake of brevity we would just like to point out what immunotherapy has been and will be in the management of cancer. Apart from the results of interleukin-2 in melanoma and, to a lesser extent, in renal cancer, it was a therapy on its way to extinction, with little practical use in the management of patients. Since the approval of ipilimumab for the treatment of malignant melanoma, no more than 4 years ago, the development of immunotherapy in multiple tumors, and in particular in lung cancer, has increased and is already one of the most promising lines of research.

This Advanced Master's Degree will allow the professional to acquire knowledge that will be extremely useful in daily work, based on critical work, a simple presentation and an effective methodology. We assume that simplicity is not incompatible with thoroughness, and through the acquisition of key knowledge, a critical spirit will emerge that will help to put this knowledge into practice. To this end, we offer you a cast of professors who are in the "first division" in the management of cancer, and many "international leaders", who have prepared in "depth each topic" from their vision as "super-specialists" but always bearing in mind that the ultimate goal of the Advanced Master's Degree is that the knowledge can be acquired by any physician interested in thoracic and cardiological cancers.

Another aspect of the work of this specialization will focus on helping to increase personal potential, improve clinical decision making or the implementation of personalized oncology, thanks to collaboration and networking.

The Professional Master's Degree will have two main axes around which all its modules will revolve: Research and clinical application. All sections will be approached from the perspective of the most recent research findings. From the research point of view, both basic and clinical research lines will be addressed. The research background of the directors and co-directors of the Master's Degree will be reflected in all the modules. As this is a master's degree with a clinical application vocation, all modules will be introduced, and their content will be applied to real clinical cases".

This **Advanced Master's Degree in Thoracic Oncology and Cardio-Oncology** contains the most complete and up-to-date scientific program on the market. The most important features include:

- Clinical cases presented by experts in the different specialties
- Graphic, schematic, and practical contents with the latest scientific and healthcare information
- Diagnostic and Therapeutic Developments in Gynecology and Assisted Reproduction
- Practical workshops on procedures, diagnosis and treatment techniques
- Real images in high resolution and practical exercises where the self-evaluation process can be carried out to improve learning
- Algorithm-based interactive learning system for decision-making in the presented clinical situations
- Special emphasis on test-based medicine and research 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



*An Advanced Master's Degree developed to provide a broad and up-to-date response to the needs of professionals in this area of intervention. The largest compendium of high quality scientific knowledge in the online teaching market"*

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*This Two Year TECH Master's Degree is the best investment that you could make into your future. A specialization created to be compatible with your professional and personal life that will take you to your goal in the easiest way, optimizing your time and effort"*

Its teaching staff is made up of leading professionals in the sector. Practicing professionals who bring their experience to this training program, as well as renowned specialists from leading scientific societies. An impressive cast of super-specialists who will put their experience and professionalism at the service of this specialization.

Thanks to its multimedia content developed with the latest educational technology, it will allow the professional a situated and contextual learning, that is to say, a simulated environment that will provide an immersive learning programmed to prepare in real situations.

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

*This Two Year TECH Master's Degree is the best investment that you could make into your future. A specialization created to be compatible with your professional and personal life that will take you to your goal in the easiest way, optimizing your time and effort.*

*Its contents, developed entirely by the best professionals in the sector, will allow you to assimilate the lessons learned through their experience, with the incomparable possibility of having real examples and therapeutic situations.*



# 02

# Objectives

The main objective of this Advanced Master's Degree in Thoracic Oncology and Cardio-Oncology is to offer you a 360° quality specialization: the most complete syllabus, first class teachers from the best hospitals and scientific centers in the world, a highly efficient methodology and a learning system chosen for its excellent results. A combination that will lead you to achieve your goals in the easiest possible way, with total compatibility with your professional and personal life.





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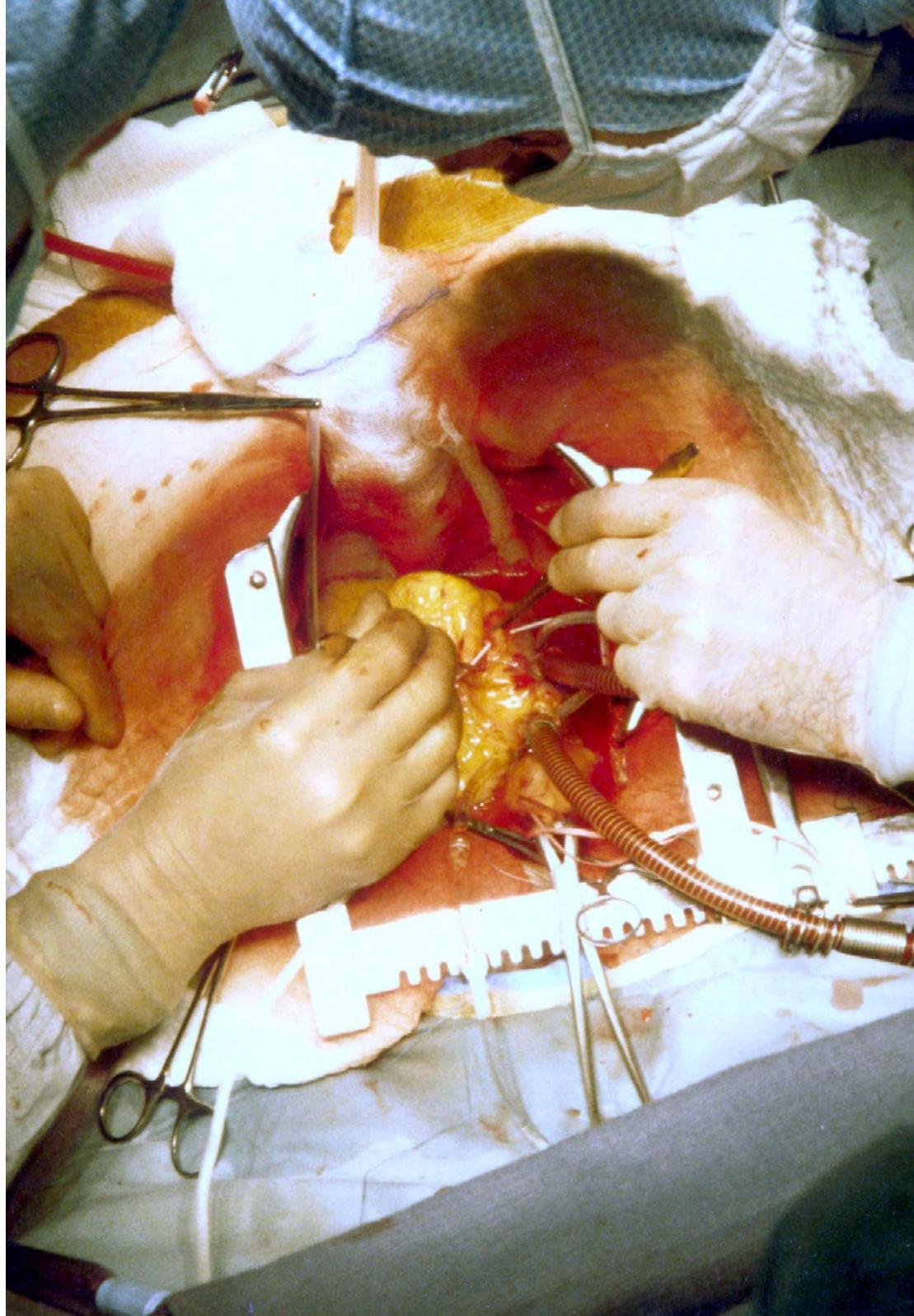
*This Advanced Master's Degree in Thoracic Oncology and Cardio-Oncology is oriented to the attainment of the most updated knowledge in Thoracic Oncology and Cardio-Oncology, in a single specialization and through a high impact educational path”*



## General Objectives

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- Update Cardiologists', Oncologists', and Hematologists' knowledge in the field of Cardio-Oncology
- Promote work strategies based on a comprehensive approach to the patient as a standard model for achieving excellent care
- 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
- Encourage professional stimulation through continuing education and research
- To create a global and up-to-date vision of thoracic oncology and all its aspects, allowing the student to acquire useful knowledge and, at the same time, to generate interest in expanding the information and discovering its application in daily practice





## Specific Objectives

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### Cardio-oncology Area

- ♦ Know the epidemiological relevance of cancer
- ♦ Know the clinical and epidemiological importance of cardiac toxicity
- ♦ Identify the epidemiological importance of prevention and early detection of cardiotoxicity
- ♦ Learn the objectives of Cardio-Oncology Units
- ♦ Know the structure and organization of Cardio-Oncology Units
- ♦ Define the concept of cardiotoxicity
- ♦ Learn the types of cardiotoxicity depending on the area affected
- ♦ Learn the types of cardiotoxicity depending on the pathophysiological mechanism  
Understand the molecular and tissue mechanisms leading to CT
- ♦ Recognize the cardiotoxic effects of thoracic radiotherapy
- ♦ Update the knowledge of the evolution of radiothoracic radiotherapy equipment and methods
- ♦ Explain the factors influencing acute and chronic radioinduced cardiotoxicity
- ♦ Recognize chemotherapeutic drugs implicated in cardiotoxicity
- ♦ Analyze the cardiotoxic effects of anthracyclines
- ♦ Explain the cardiotoxic effects of anti-tubulin drugs
- ♦ Explain the cardiotoxic effects of antimetabolite drugs
- ♦ Explain the cardiotoxic effects of alkylating agents and other drugs that interact with DNA
- ♦ Analyze the cardiotoxic effects of biological agents, specifically trastuzumabtype monoclonal antibodies
- ♦ Become familiar with other potentially cardiotoxic biological agents
- ♦ Analyze the cardiotoxic effects of cell kinase inhibitors
- ♦ Know other oncological treatments with potential cardiotoxic effect, such as anti-angiogenic drugs, histone deacetylase inhibitors, differentiation and/or apoptosis inducers and hormone therapy
- ♦ Understand the individual susceptibility factors, both genetic and acquired, involved in the development of cardiac toxicity
- ♦ Be able to perform a comprehensive risk assessment of patients undergoing oncologic treatment
- ♦ Describe the monitoring required by patients during treatment for cardiotoxicity
- ♦ Identify biomarkers as a method used to detect cardiotoxicity early, especially troponins and natriuretic peptides
- ♦ Delve into the knowledge of echocardiography, with special attention to the "global longitudinal strain" technique as a marker for early detection of cardiac toxicity
- ♦ Know the role of cardiac magnetic resonance imaging in the early detection of cardiotoxicity
- ♦ Recognize the clinical relevance and mechanisms involved in the onset of ventricular dysfunction and heart failure secondary to cardiac toxicity
- ♦ Deepen our knowledge of myocardial involvement caused by anthracyclines
- ♦ Identify other chemotherapy drugs with the capacity to produce myocardial toxicity
- ♦ Deepen our knowledge of myocardial toxicity induced by monoclonal antibodies, especially tratuzumab
- ♦ Recognize the ability of therapies directed against new molecular targets (cellular kinase inhibitors) and proteosome inhibitors to produce ventricular dysfunction and heart failure
- ♦ Learn the effects of thoracic radiotherapy on the myocardium

- ♦ Improve knowledge in the clinical diagnosis of heart failure associated with cardiotoxicity
- ♦ Acquire updated knowledge in the treatment of heart failure and ventricular dysfunction related to oncological treatments
- ♦ Know the importance of early detection of myocardial involvement due to cardiotoxicity
- ♦ Describe the appropriate action to be taken in the event of an increase in circulating biomarkers during oncologic treatment
- ♦ Describe the appropriate response to the appearance of "global longitudinal strain" alteration during oncological treatment
- ♦ Learn the monitoring strategy during treatment with anthracyclines
- ♦ Learn the monitoring strategy during treatment with monoclonal antibodies, especially trastuzumab
- ♦ Learn the monitoring strategy during treatment with cell kinase inhibitors
- ♦ Understand the potential causes and mechanisms of ischemic heart disease in the context of cardiac toxicity
- ♦ Identify patients at high risk of coronary artery disease
- ♦ Define the role of oncological treatments such as fluoropyrimidines in the development of ischemic heart disease
- ♦ Acquire updated knowledge on diagnostic methods for coronary artery disease related to cardiotoxic drugs
- ♦ Get up to date on the management of acute coronary syndrome in the context of oncologic treatment
- ♦ Learn the monitoring strategy in patients who have had coronary ischemia
- ♦ Know the clinical relevance of thoracic radiotherapy in the development of coronary artery disease and its mechanisms
- ♦ Recognize the risk factors for the development of ischemic heart disease in patients who have received thoracic radiotherapy
- ♦ Expand knowledge of the diagnostic methods of radiation-induced coronary artery disease
- ♦ Analyze the treatment options in coronary artery disease associated with thoracic radiotherapy
- ♦ Improve knowledge of the treatment strategy for chronic ischemic patients receiving oncologic treatment
- ♦ Know the arrhythmogenic capacity and clinical relevance of cardiac toxicity
- ♦ Learn the oncological treatments with the capacity to prolong the QT interval of the electrocardiogram and the factors that increase the probability of this occurring
- ♦ Acquire in-depth knowledge of the electrocardiographic diagnosis of QT interval prolongation
- ♦ Know the risk of developing ventricular arrhythmias and their specific treatment
- ♦ Identify strategies to prevent prolongation of the QT interval on the electrocardiogram
- ♦ Define the implications of prolongation of the QT interval on the electrocardiogram and the appearance of ventricular arrhythmias on the continuity of specific treatment
- ♦ Recognize the clinical relevance and mechanisms of atrial tachyarrhythmias, especially atrial fibrillation in oncologic patients
- ♦ Learning about cancer treatments that favor the development of atrial fibrillation

- ♦ Analyze the need for anticoagulation and its risk-benefit in oncologic patients with atrial fibrillation
- ♦ Review the treatment options in atrial fibrillation in the context of cardiotoxicity
- ♦ Recognize the clinical significance of bradyarrhythmias related to oncologic treatment
- ♦ Learn the oncological treatments that are associated with the development of bradyarrhythmias and their therapeutic implications
- ♦ Know the potential toxic effects of oncological treatments at the valvular level
- ♦ Update knowledge on the attitude towards chronic valvular patients and prosthetic valve patient receiving oncological treatment
- ♦ Know the potential toxic effects of oncological treatments on the pericardium
- ♦ Learn the treatment strategy for patients with pericardial effusion secondary to cardiac toxicity
- ♦ Recognize the specific role of radiotherapy in the development of pericardial disease
- ♦ Define the assessment of metastatic pericardial involvement
- ♦ Recognize the clinical relevance of hypertension in oncologic patients
- ♦ Analyze the relationship between antiangiogenic drugs and arterial hypertension and its mechanisms
- ♦ Deepen the knowledge of the diagnosis of arterial hypertension associated with the use of antiangiogenic drugs
- ♦ Define the strategy for monitoring arterial hypertension during oncologic treatment
- ♦ Know the treatment of arterial hypertension related to oncologic treatment
- ♦ Recognize the clinical relevance of venous thromboembolic disease in oncologic patients
- ♦ Know the different factors and situations that contribute to the development of venous thromboembolic disease in oncologic patients
- ♦ Learn the antineoplastic treatments associated with increased risk of venous thromboembolic disease
- ♦ Describe prevention measures for cancer-related venous thromboembolic disease in different clinical scenarios
- ♦ Analyze the relationship and clinical significance of venous thromboembolic disease with the use of central venous catheters
- ♦ Learn the forms of clinical presentation, diagnostic and follow-up methods, as well as the treatment of venous thromboembolic disease with the use of central venous catheters
- ♦ Know the methods of prevention of venous thromboembolic disease with the use of central venous catheters
- ♦ Identify the forms of presentation and deepen the knowledge of the diagnosis of deep vein thrombosis and cancer-associated pulmonary thromboembolism
- ♦ Analyze the different therapeutic options for cancer-associated thromboembolic disease
- ♦ Know the capacity of some oncological treatments to produce arterial thrombosis
- ♦ Recognize the clinical relevance and pathophysiological mechanisms of peripheral vascular disease in the oncologic patient
- ♦ Know the treatments involved in the early development of peripheral vascular disease
- ♦ Recognize the clinical significance and mechanisms involved in the occurrence of cerebral

vascular disease in relation to oncological treatments

- ♦ Know the oncological treatments associated with the appearance of cerebral vascular disease
- ♦ Learn the relationship of some oncological treatments with the development of pulmonary hypertension
- ♦ Define strategies to identify and control risk factors to limit the development of cardiotoxicity related to oncologic drugs
- ♦ Know the measures capable of limiting cardiac toxicity due to anthracyclines
- ♦ Know the measures capable of limiting cardiac toxicity due to trastuzumabtype monoclonal antibodies
- ♦ Know the measures capable of limiting cardiac toxicity related to cellular kinase inhibitors
- ♦ Learn strategies to limit the risk of toxicity related to radiotherapy
- ♦ Analyze the role of beta-blockers in cardioprotection
- ♦ Analyze the role of angiotensin receptor inhibitors and antagonists in cardioprotection
- ♦ Identify other pharmacological treatments with a possible cardioprotective effect
- ♦ Become familiar with the follow-up required in patients with cardiac toxicity or at high risk of developing it
- ♦ Explain the long-term follow-up of patients who have received thoracic radiotherapy
- ♦ Understand the occurrence and determine the clinical management of patients with established oncologic disease who present with an acute ischemic event
- ♦ Understand the occurrence and determine the clinical management of pediatric patients requiring potentially cardiotoxic oncologic treatment
- ♦ Understand the onset and determine the clinical management of geriatric patients requiring oncologic treatment

- ♦ Get up to date on anticoagulant and antiplatelet therapy in oncology patients
- ♦ Broaden knowledge in relation to oncology patients with arrhythmias and require implantable devices (pacemakers, defibrillators)
- ♦ Recognize the importance of research in the context of cardiotoxicity
- ♦ Become familiar with current basic lines of research and future perspectives
- ♦ Become familiar with current clinical lines of research and future perspectives

### **Thoracic Oncology Area**

- ♦ Analyze the effectiveness of different tests proposed for lung cancer screening: low-resolution helical computed tomography, chest radiography and sputum cytology in the early diagnosis of lung cancer
- ♦ Define the potential of other screening tests and estimate the population susceptible to be screened for lung cancer
- ♦ Update knowledge in the molecular biology of cancer, especially in relation to the concept of genetic heterogeneity, circulating biomarkers and tissue molecular markers
- ♦ Provide and expand knowledge on immunotherapy, as an example of a clear scientific advance in translational research, and one of the most promising lines of research in cancer treatment
- ♦ Create a global and updated vision of the exposed topics that allow the students to
- ♦ Acquire useful knowledge and, at the same time, generate interest in expanding the information and discovering its application in their daily practice
- ♦ Define the potential of other screening tests and estimate the population susceptible to be screened for lung cancer

- Review the performance and usefulness of each of the tests used in the diagnosis of thoracic tumors
- Describe the usefulness and performance of PET/CT with F18-FDG in the diagnosis, staging, treatment control and monitoring of thoracic tumors
- Learn more about thoracic MRI since it provides very complete anatomical information that can be fundamental for the patient's treatment, in addition to a functional assessment, and on many occasions its tissue characterization
- Review of available diagnostic tests for the assessment of cardiopulmonary reserve, necessary for the identification of patients at high risk of developing perioperative complications and significant long-term functional limitation after resection surgery
- Review the changes proposed for the new edition of the TNM, which imply a more accurate tumor staging
- Describe the evolution of current minimally invasive surgical techniques that allow complex surgeries to be performed with small incisions, preserving as much tissue as possible and with an accelerated recovery with less discomfort
- Explain the basis of thoracic radiotherapy, as well as the different techniques available and their efficacy in order to understand their place in the management of thoracic tumors
- Describe the new design of personalized clinical trials given the evidence that selective drugs have therapeutic benefits in molecularly defined subgroups of patients
- Describe the therapeutic algorithm for the management of each of the thoracic tumors and in the different stages
- Interpret the impact of mutations on drug selection
- Discuss the current landscape of lung cancer immunotherapy, combinations in clinical development, strategies for dose selection and trial design, clinical pharmacology and regulatory considerations
- Determine the positioning of each agent for the treatment of lung cancer
- Construct an appropriate treatment plan for a patient with a thoracic tumor at each stage
- Develop an appropriate treatment plan for patients with non-small cell lung cancer (NSCLC) that has progressed after initial treatment
- Design a treatment plan for a patient with small cell lung cancer (SCLC)
- Develop an appropriate treatment plan for a patient with SCLC that has progressed after initial treatment
- Help improve the diagnosis and management of lower incidence tumors such as neuroendocrine tumors, mesothelioma, thymoma or tumors of the posterior mediastinum and thoracic wall
- Update of knowledge on disseminated stage non-small cell lung cancer in different topics that, due to their topicality and importance, represent major changes for the clinical practice of any specialist in thoracic tumors
- Discuss the growing understanding of the molecular biology and immunology of lung tumors and how they are modifying the diagnostic and therapeutic approach
- Present the latest advances in translational research with practical implications
- Assess the various therapeutic options available for first and subsequent lines of treatment in SCLC and neuroendocrine tumors
- Explain the cell biology and genetics of low and intermediate grade neuroendocrine tumors
- Identify the role of peptide receptor radionuclide therapy in the treatment of neuroendocrine lung tumors

- ♦ Assess the efficacy and safety aspects of the different therapeutic options
- ♦ Analyze the multidisciplinary treatment of pulmonary mesothelioma and future treatment options
- ♦ Define the prognostic value of the anatomopathological classification of thymomas
- ♦ Update on multidisciplinary thymoma treatment and future treatment options
- ♦ Discuss the role of surgery in posterior mediastinal tumors
- ♦ Delve into the diagnosis and treatment of thoracic wall tumors
- ♦ Update on the treatment of secondary pulmonary metastases
- ♦ Explain the different surgical options for the management of secondary lesions and their indications, which may, in turn, condition patient management
- ♦ Explain the Enhanced support care strategy, developed by the Christie NHS Foundation Trust to better adapt patient care to the changing cancer landscape
- ♦ We must be aware that excellent care must be continuous and we must move towards integrated care models together with the rest of the specialists and, in particular, with primary care
- ♦ Improve the way of giving bad news to patients since, although there are as many ways of doing it as there are doctors and patients, there are some guidelines for the doctor to do it in the best way possible
- ♦ Describe the vision of the emergency physician and how the detection of frequenters is a



sign that can help improve the organizational model

- Learn the new therapeutic arsenal for the management of the main comorbidities of patients with thoracic tumors and know the therapeutic objectives in order to avoid poor control, therapeutic interactions or overtreatment
- Assess the impact of age on patient prognosis and treatment outcomes
- Explain the different online platforms available that can help us to follow up patients and create a professional network
- Learn the basics of decision support systems that facilitate decision making in complex contexts
- Describe the virtues of Big Data for the detection of relationships between variables that can help us in the knowledge and for multiple purposes

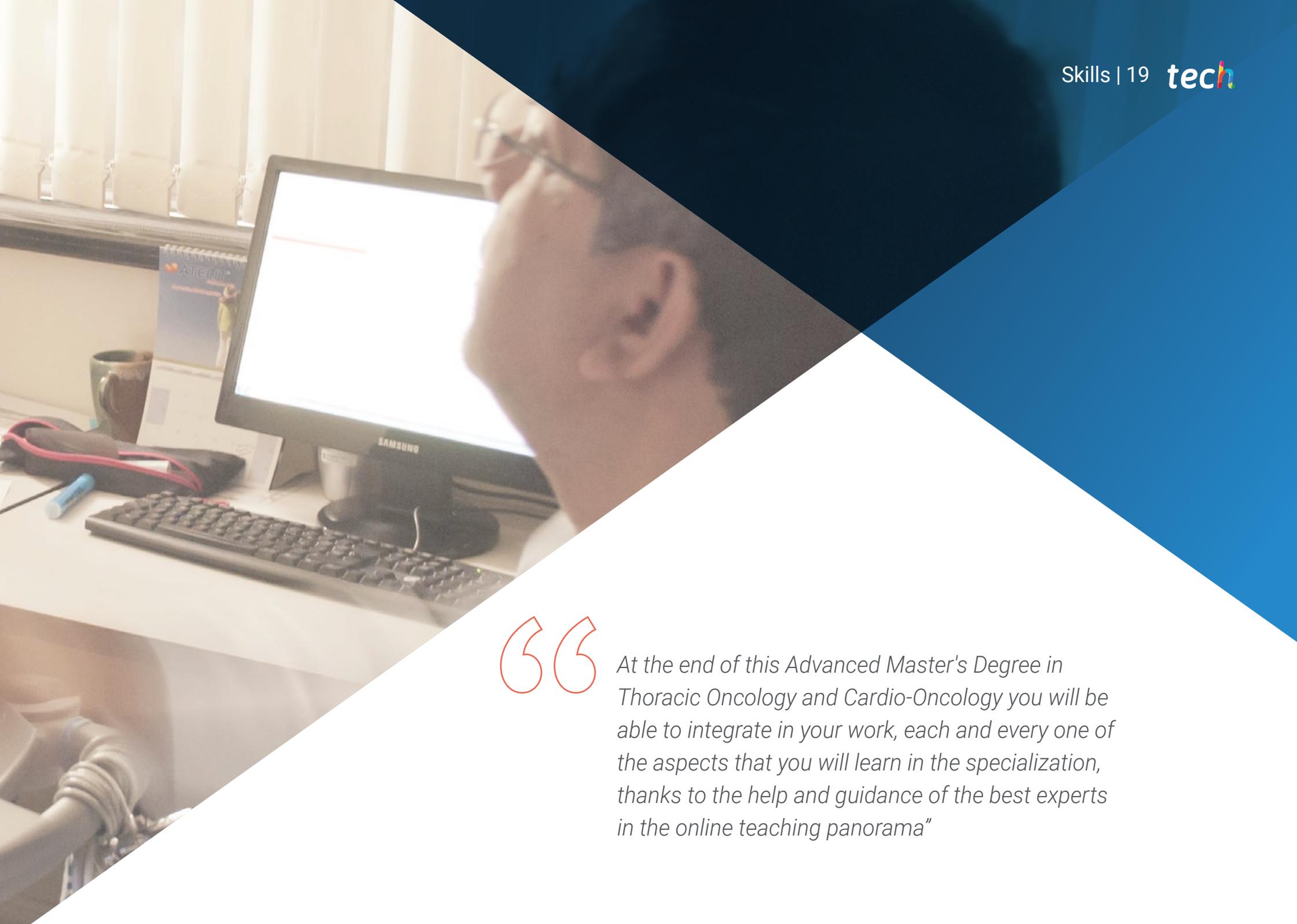


*A practical specialization that will allow you to grow in your profession with the confidence of having all the essential support systems and flexibility to achieve with this program the skills of a top professional"*

# 03 Skills

After passing the evaluations of the Advanced Master's Degree in Thoracic Oncology and Cardio-Oncology, the professionals will have acquired the necessary skills to intervene in this area of action, with the security and reliability of the best scientific and technical update. This qualification will translate into a high-quality practice that will have a direct impact on patient care and on the professional positioning of the student, who will become a highly valuable professional figure for any organization.





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*At the end of this Advanced Master's Degree in Thoracic Oncology and Cardio-Oncology you will be able to integrate in your work, each and every one of the aspects that you will learn in the specialization, thanks to the help and guidance of the best experts in the online teaching panorama”*

The professional will be able to:



## Basic Skills

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- ♦ Possess and understand knowledge that provides a basis or opportunity to be original in the development and/or application of ideas, often in a research context
- ♦ Apply acquired knowledge and problem-solving skills in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their area of study
- ♦ Integrate knowledge and face the complexity of making judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities linked to the application of their knowledge and judgments
- ♦ Communicate their conclusions, knowledge, and supporting arguments - to specialized and non-specialized audiences in a clear and unambiguous manner
- ♦ Acquire the learning skills that will enable them to continue studying in a manner that will be largely self-directed or autonomous





## Specific Skills from the Degree

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### Cardio-oncology Area

- ♦ Assess the clinical and epidemiological importance of toxicity and the organization of Cardio-Oncology Units
- ♦ Understand the molecular and tissue mechanisms leading to cardiac toxicity Determine the potential causal role of CT of radiotherapy, immunotherapy and chemotherapy treatments
- ♦ Understand the individual susceptibility factors for the development of cardiac toxicity and be able to perform a comprehensive risk assessment of patients undergoing oncologic treatment
- ♦ Incorporate early detection methods for cardiac toxicity in each clinical context
- ♦ Identify the mechanisms and clinical significance of ventricular dysfunction and heart failure secondary to cardiac toxicity and become familiar with the different therapeutic options in the setting of established cardiac toxicity
- ♦ Incorporate knowledge of the relationship of cardiotoxic therapies to the genesis of ischemic heart disease
- ♦ Identify the arrhythmogenic capacity of cardiac toxicity and the management of arrhythmias in oncological patients
- ♦ Identify the potential toxic effects of oncological treatments at the valvular and pericardial levels
- ♦ Point out the implications on the oncologic treatment of arterial hypertension
- ♦ Describe the various vascular complications related to oncologic treatments

- ♦ Add to your knowledge the different treatment options with cardioprotective effect
- ♦ Become familiar with the follow-up required in patients with cardiac toxicity or at high risk of developing it
- ♦ Point out the importance and perform the appropriate management of complex clinical situations derived from cardiac toxicity
- ♦ Incorporate the latest advances in basic and clinical research in the context of cardiac toxicity

### Thoracic Oncology Area

- ♦ Describe the advances made in the field of Thoracic Oncology in detail and their applications in routine clinical practice
- ♦ Identify the pathological processes in thoracic oncologic diseases and know their main characteristics
- ♦ Describe the main characteristics of oncologic lung disease and incorporate the advances established in recent years
- ♦ Incorporate new knowledge and approaches to oncologic lung disease
- ♦ Perform a comprehensive approach to thoracic oncologic pathology based on current advances
- ♦ Perform an in-depth approach to localized and metastatic pulmonary pathology based on current knowledge
- ♦ Improve knowledge of pleural, mediastinal and thoracic wall tumors
- ♦ Identify the main elements of overlap between medical oncology and radiation oncology in lung tumor pathology



- ◆ Incorporate thoracic oncologic pathology management techniques at a technical level in the diagnostic-therapeutic process, as well as in patient monitoring
- ◆ Value research and the incorporation of technological advances as the only way to progress in Thoracic Oncology
- ◆ Describe current advances and new perspectives that open new avenues of development within Thoracic Oncology
- ◆ Incorporate new technologies into daily practice, knowing their advances, limitations and future potential

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*An educational process that will turn your effort into success thanks to an online learning system created to be integrated into your daily life in a real and feasible way”*



# 04

# Course Management

The teaching staff of this Two Year Master's Degree is one of its fundamental values. Handpicked from among the best in the industry, they form a group of renowned experts who know, not only the theoretical aspects of this type of work, but also each and every one of its aspects and the different situations in which professionals may find themselves. Additionally, other recognized specialists participate in its design and preparation, which means that the program is developed in an interdisciplinary manner. A team of top-level professionals who will be your allies to help you make the leap to reach the highest level of competence in your profession



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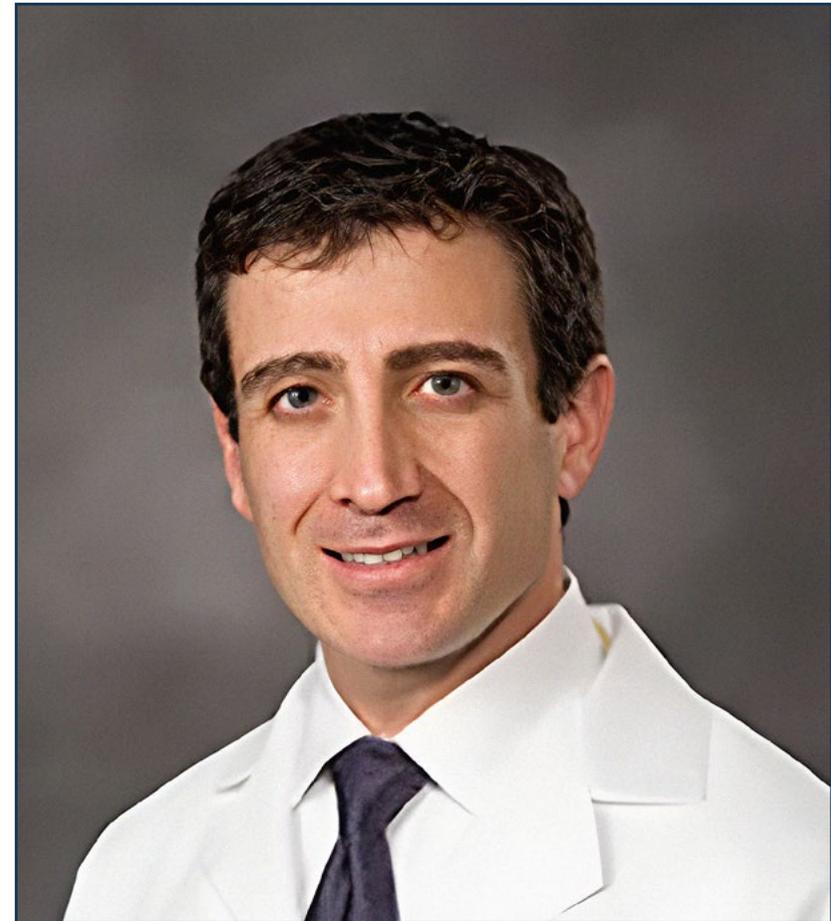
*An impressive group of teachers, chosen for their exceptional medical, scientific, and teaching expertise, coming from different fields, will be your professors throughout the training program: a unique opportunity not to be missed”*

## International Guest Director

Awarded for his contribution to innovative advances in the field of **Radiation Oncology**, Dr. Drew Moghanaki is a reference in the treatment of **Lung Cancer**. He specializes in advanced techniques such as **Intensity Modulated Radiation Therapy** to offer more precise, effective and less invasive treatments to his patients. In this sense, he has performed his work in reference health institutions such as **UCLA Health in California, United States**.

He has also been a pioneer in the implementation of **Stereotactic Body Radiotherapy for Lung Tumors**. Through this technique, he has managed to increase survival rates and significantly optimize the quality of life of numerous users. It has also developed a multidisciplinary approach in the management of **Neoplasms**, which has helped specialists to design personalized treatments to improve their clinical results. On the other hand, he has managed more than **50 million dollars in Lung Cancer program** development through the **U.S. Department of Veterans Affairs**. His initiatives have been instrumental in driving progress in diagnosis, treatment and access to high quality care for people who have served in the Armed Forces.

Committed to excellence, he balances this work with his role as a **clinical researcher**. In this sense, he has published numerous scientific articles on subjects such as **Magnetic Resonance Guided Radiotherapy**. One of his most outstanding works is the **VALOR** trial, focused on the analysis of the effectiveness of surgery and Stereotactic Radiotherapy in Lung Cancer. Thanks to this, physicians have obtained solid scientific evidence to make **informed decisions** about the best approach for the treatment of this pathology taking into account the specific characteristics of the patients. In addition, he participates as a speaker at scientific congresses to discuss the latest innovations in **Radiation Oncology**.



## Dr. Moghanaki, Drew

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- Chief of the Thoracic Oncology Service at UCLA Health, California, United States
- Director of Clinical Research at the U.S. Department of Veterans Affairs
- Director of Pulmonary Precision Oncology at the West Los Angeles VA Medical Center
- Section Chief of Radiation Oncology at VA Greater Los Angeles Health System
- Chair of Diagnostic Research Team at UCLA Jonsson Comprehensive Cancer Center
- Radiation Epidemiology Oncology Residency at the University of Pennsylvania
- General Surgery Internship at Vanderbilt University Medical Center
- M.D. from Vanderbilt University School of Medicine
- Master's Degree in Public Health and Epidemiology from University of California
- Bachelor of Science degree in Biochemistry from California Polytechnic State University.
- Member of:
  - American Cancer Society
  - American Society for Radiosurgery
  - International Association for the Study of Lung Cancer

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*Thanks to TECH, you will be able to learn with the best professionals in the world”*

## Management



### Dr. García – Foncillas, Jesús

- Director of the Chair of Molecular Individualized Medicine of the Autonomous University of Madrid (UAM-Merck)
- Director of the Oncology Institute "OncoHealth"
- Director of the Oncology Department of the University Hospital "Fundación Jiménez Díaz"
- Director of the Translational Oncology Division of the Health Research Institute FJD-UAM
- Professor of Oncology at the Autonomous University of Madrid



### Dr. Ibáñez Cabeza, Borja

- Head of the Jiménez Díaz Cardiology Foundation Research Unit
- Director of the Clinical Research Department of the Carlos III National Center for Cardiovascular Research (CNIC)

## Management



### Dr. Macía Palafox, Ester

- ♦ Clinical Manager of the Cardio-Oncology Unit of the Fundación Jiménez Díaz University Hospital in Madrid
- ♦ Degree in Medicine from the Complutense University of Madrid
- ♦ MIR specialist in Cardiology at La Paz University Hospital in Madrid
- ♦ Master's Degree in Clinical Arrhythmology (Complutense University of Madrid)
- ♦ Fellowship in Investigative Arrhythmology (Columbia University, New York)
- ♦ Member of the Spanish Society of Cardiology. Cardio-Oncology Work Group



### Dr. Villar Álvarez, Felipe

- ♦ Associate Physician of Pulmonology, Jiménez Díaz Foundation University Hospital, Madrid (2008-present)
- ♦ Director of the Editorial Committee of the Respiratory Pathology Journal of Neumomadrid
- ♦ Researcher of the CIBER network of Respiratory Diseases (CIBERES) belonging to Group 04
- ♦ Member of the Madrid Society of Pulmonology and Thoracic Surgery (Neumomadrid), the Spanish Society of Pulmonology and Thoracic Surgery (SEPAR) and the European Respiratory Society (ERS)
- ♦ Master's Degree in Clinical Unit Management. Murcia University. (2013-2015)
- ♦ Doctor of Medicine from the Complutense University Madrid (2011). Outstanding Cum Laude Qualification. Best Doctoral Thesis Award in Pulmonology and Thoracic Surgery 2010-2011 by the Madrid Society of Pulmonology and Thoracic Surgery (Neumomadrid)
- ♦ Specialist (MIR) in Pulmonology. Gregorio Marañón General University Hospital, Madrid (2008)

## Management



### Dr. Oruezábal Moreno, Mauro Javier

- ♦ Head of the medical Oncology Service at La Paz University Hospital since 2017
- ♦ Research Fellow at University of Southampton (2016-present)
- ♦ Master's Degree in Bioinformatics and biostatistics UOC-UB (2016-ongoing)
- ♦ Master's Degree in bioinformatic analysis by the Pablo de Olavide University (2015-2016)
- ♦ Doctor of Medicine from the Complutense University of Madrid. Outstanding Cum Laude Qualification (2002)
- ♦ Member of the Spanish Society of Medical Oncology and GECP Group (Spanish Spanish Group of Lung)
- ♦ Specialist (MIR) in Medical Oncology, University Hospital San Carlos of Madrid (2000)
- ♦ Degree in Medicine and Surgery, University of Navarra (1995)



### Dr. Muguruza, Ignacio

- ♦ Head of Department, Quirónsalud Public Hospitals, Madrid (2011-present)
- ♦ Surgeon certified in robotic surgery
- ♦ Associate Professor of Medicine Rey Juan Carlos University of Madrid
- ♦ Director Integrated Research Project (IIP) of Thoracic Oncology of the Spanish Society of Pulmonology and Thoracic Surgery (SEPAR) (2017-present)
- ♦ Secretary Integrated Research Project (IIP) Thoracic Oncology SEPAR (2011-present)
- ♦ Secretary Thoracic Oncology Area National Society of Pulmonology and Thoracic Surgery (SEPAR) (2009-2013)
- ♦ Deputy Director of the Editorial Committee of the Respiratory Pathology Journal of Neumomadrid
- ♦ Member of the National Commission of Thoracic Surgery, Ministry of Health (2006-2012)

## Professors

### Ms. De La Fuente Alonso, Cristina

- ♦ Department of Radiation Oncology, University Hospital Puerta de Hierro, Majadahonda, Madrid, Spain

### Dr. Azinovic Gamo, Ignacio

- ♦ Head of the Radiation Oncology Department at the Jiménez Díaz Foundation Hospital Quironsalud, Madrid

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### Dr. Arroyo Rivera, Belén

- ♦ Cardiology Department, Jiménez Díaz Foundation University Hospital, Quironsalud, Madrid

### Dr. Alonso Martín, Joaquín Jesús

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- ♦ Medical Degree from the University of Cadiz

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- ♦ Oncology Department, Jiménez Díaz Foundation Hospital, Quironsalud, Madrid

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- ♦ Cardiology Department at the Quironsalud University Hospital Madrid

### Dr. Córdoba Mascuñano, Raúl

- ♦ Hematology Department, Jiménez Díaz Foundation University Hospital, Quironsalud, Madrid

### Dr. Cornago Navascues, Javier

- ♦ Hematology Department, Jiménez Díaz Foundation University Hospital, Quironsalud, Madrid

### Dr. Devesa Arbiol, Ana

- ♦ Cardiology Department, Jiménez Díaz Foundation University Hospital, Quironsalud, Madrid

### Dr. Díaz, Claudia Marcela

- ♦ Oncology Department, Jiménez Díaz Foundation Treatment Hospital Quironsalud, Madrid

### Dr. Díaz Antón, Belén

- ♦ Cardiology Department at Montepíncipe Hospital, Madrid

### Ms. Díaz Peláez, Elena

- ♦ Cardiology Service, University Complex of Salamanca. Institute of Biomedical Research of Salamanca (IBSAL)

# 05

## Structure and Content

The structure of this Master's Degree has been created in order to compile each and every one of the subjects that professionals in this area ought to master, in a comprehensive but very specific syllabus. With an extensive course, structured in areas of intervention, the student will learn the different theoretical and practical approaches and techniques necessary for medical activity in Thoracic Oncology and Cardio-Oncology. Learning that will translate into practical mastery of the techniques. Always with the tutoring and accompaniment of the exceptional teachers who have developed the contents.





“

*This Advanced Master's Degree is an incomparable opportunity to obtain, in a single program, all the knowledge required in Thoracic Oncology and Cardio-Oncology"*

## Cardio-oncology Area

### Module 1. Epidemiology of Cancer

- 1.1. Epidemiological Significance of Cancer
- 1.2. Epidemiological Significance of Cardiotoxicity in Oncology
- 1.3. Epidemiological Significance of Cardiotoxicity in Hematology

### Module 2. Oncologic Treatments with Cardiotoxic Effect

- 2.1. Definition of Cardiotoxicity. Affected Cardiac Chambers. Pathophysiological Mechanisms of Cardiotoxicity
- 2.2. Radiotherapy as a Cause of Cardiotoxicity
  - 2.2.1. Evolution of Radiotherapy Equipment and Methods
  - 2.2.2. Factors that Influence Radiation-Induced Cardiotoxicity
  - 2.2.3. Acute Toxicity
  - 2.2.4. Chronic Toxicity
- 2.3. Chemotherapy as a Cause of Cardiotoxicity
  - 2.3.1. Anthracyclines
  - 2.3.2. Antitubulin Drugs
  - 2.3.3. Antimetabolites
  - 2.3.4. Alkylating Agents and Other Drugs that Interact with DNA
- 2.4. Biological Agents as a Cause of Cardiotoxicity: Monoclonal Antibodies
  - 2.4.1. Trastuzumab
  - 2.4.2. Other Monoclonal Antibodies
- 2.5. Other Potentially Cardiotoxic Biological Agents
  - 2.5.1. Cytokines
  - 2.5.2. Interferons
- 2.6. Therapies Aimed at New Molecular Targets and Cardiotoxicity: Inhibitors of Cellular Kinases
- 2.7. Immune Checkpoint Inhibitors and Cardiotoxicity
- 2.8. Other Potentially Cardiotoxic Oncologic Treatments
  - 2.8.1. Histone Deacetylase Inhibitors
  - 2.8.2. Oral Antiangiogenics
  - 2.8.3. Differentiation and/or Apoptosis Inducers
  - 2.8.4. Hormonal Agents

### Module 3. Comprehensive Assessment of the Risk of Cardiotoxicity Development

- 3.1. Individual Susceptibility to Cardiotoxicity: Genetic Factors
- 3.2. Individual Susceptibility to Cardiotoxicity: Non-Genetic Factors
  - 3.2.1. Cardiovascular Risk Factors
  - 3.2.2. Comorbidities
  - 3.2.3. Combination of Oncologic Treatments
- 3.3. Cardiological Assessment before Treatment in Patients without Known Heart Disease
  - 3.3.1. Clinical Assessment
  - 3.3.2. Complementary Tests
- 3.4. Cardiological Assessment before Treatment in Patients with Known Heart Disease
  - 3.4.1. Clinical Assessment
  - 3.4.2. Complementary Tests
- 3.5. Monitoring during Treatment of Patients Subjected to Cardiotoxic Treatments
  - 3.5.1. Clinical Assessment
  - 3.5.2. Complementary Tests

### Module 4. Early Detection of Cardiotoxicity

- 4.1. Circulating Biomarkers: Troponins
- 4.2. Circulating Biomarkers: Natriuretic Peptides
- 4.3. Other Circulating Biomarkers for Early Detection of Cardiotoxicity
- 4.4. Echocardiography
- 4.5. Cardiovascular Magnetic Resonance Imaging
- 4.6. Computerised Axial Tomography

### Module 5. Myocardial Toxicity

- 5.1. Incidence and Clinical Relevance
- 5.2. Pathophysiology of Ventricular Dysfunction and Heart Failure in the Context of Cardiotoxicity
- 5.3. Drugs Implicated in the Development of Ventricular Dysfunction and Heart Failure
  - 5.3.1. Anthracyclines
  - 5.3.2. Other Chemotherapy Drugs
  - 5.3.3. Biological Agents: Monoclonal Antibodies
  - 5.3.4. Therapies Aimed at New Molecular Targets: Inhibitors of Cellular Kinases
  - 5.3.5. Proteasome Inhibitors

- 5.4. Radiotherapy and Heart Failure
- 5.5. Methods for Diagnosing Myocardial Involvement
  - 5.5.1. Electrocardiogram
  - 5.5.2. Echocardiography
  - 5.5.3. Other Non-Invasive Imaging Techniques
- 5.6. Treatment Strategies
  - 5.6.1. Treatment of Acute Heart Failure
  - 5.6.2. Chronic Treatment of Patients with Ventricular Dysfunction
- 5.7. Presymptomatic Myocardial Involvement
  - 5.7.1. Management of Patients with Elevated Circulating Biomarkers during Oncologic Treatment
  - 5.7.2. Management of Patients with Preclinical Impairment of Ventricular Function during Oncologic Treatment
- 5.8. Monitoring Strategy during Treatment with Drugs Capable of Causing Myocardial Toxicity
  - 5.8.1. Anthracyclines
  - 5.8.2. Biological Agents: Monoclonal Antibodies
  - 5.8.3. Therapies Aimed at New Molecular Targets: Inhibitors of Cellular Kinases
  - 5.8.4. Immune Checkpoint Inhibitors

## Module 6. Ischemic Heart Disease and Cardiotoxicity

- 6.1. Incidence of Ischemic Heart Disease in Oncology Patients
- 6.2. Identifying Patients at High Risk of Coronary Artery Disease
- 6.3. Pathophysiology of Ischemic Heart Disease in the Context of Oncologic Treatment
- 6.4. Pharmacologic Oncologic Therapies that are Associated with Ischemic Heart Disease
  - 6.4.1. Fluoropyrimidine
  - 6.4.2. Vascular Endothelial Growth Factor Inhibitors
  - 6.4.3. Others (Cisplatin)
- 6.5. Diagnostic Methods for Coronary Artery Disease Related to Cardiotoxic Drugs
  - 6.5.1. Electrocardiogram
  - 6.5.2. Functional Tests
  - 6.5.3. Non-Invasive Imaging Tests
  - 6.5.4. Invasive Imaging Tests

- 6.6. Acute Coronary Syndrome in the Context of Oncologic Treatment
- 6.7. Monitoring and Treatment Strategy in the Patient with Coronary Ischemia
- 6.8. Thoracic Radiotherapy and Ischemic Heart Disease
  - 6.8.1. Incidence and Pathophysiology of Radiation-Induced Coronary Artery Disease
  - 6.8.2. Risk Factors for the Development of Ischemic Heart Disease in Radiotherapy Patients
  - 6.8.3. Clinical Assessment and Diagnostic Methods of Coronary Heart Disease in Radiotherapy Patients
  - 6.8.4. Treatment Options in Coronary Artery Disease Associated with Radiotherapy
- 6.9. Management of Chronic Ischemic Patients Receiving Oncologic Treatment

## Module 7. Arrhythmias and Cardiotoxicity

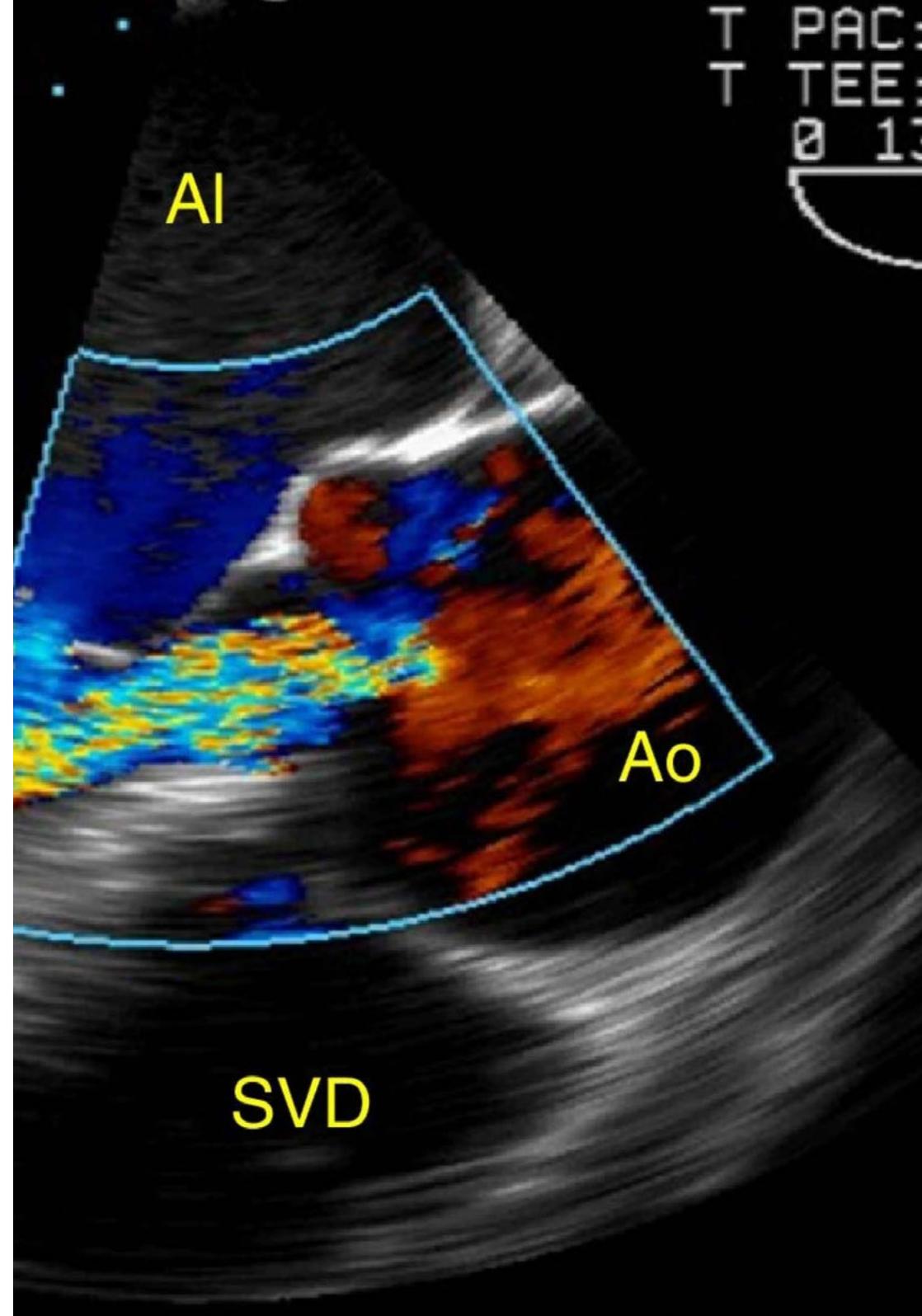
- 7.1. Incidence and Pathophysiology of Cardiac Arrhythmias Related to Oncologic Treatments
- 7.2. QT Interval Prolongation: Causative Drugs and Associated Risk Factors
- 7.3. QT Interval Prolongation: Diagnostic Criteria and Risk Stratification of Ventricular Arrhythmias
- 7.4. QT Interval Prolongation: Prevention Strategies and Implications on the Continuity of Specific Treatment
- 7.5. Atrial Fibrillation: Incidence, Risk Factors, and Clinical Presentation
- 7.6. Atrial Fibrillation: Oncologic Treatments Involved in its Development
- 7.7. Atrial Fibrillation: Anticoagulant Treatment
  - 7.7.1. Thrombotic and Hemorrhagic Risk Assessment
  - 7.7.2. Anticoagulation with Heparin
  - 7.7.3. Anticoagulation with Dicoumarinics
  - 7.7.4. Direct-Acting Anticoagulants
- 7.8. Treatment Strategy in Atrial Fibrillation: Rate Control versus Rhythm Control
- 7.9. Bradyarrhythmias Associated with Oncologic Treatment
  - 7.9.1. Sinus Dysfunction
  - 7.9.2. Atrioventricular Block
  - 7.9.3. Therapeutic Implications

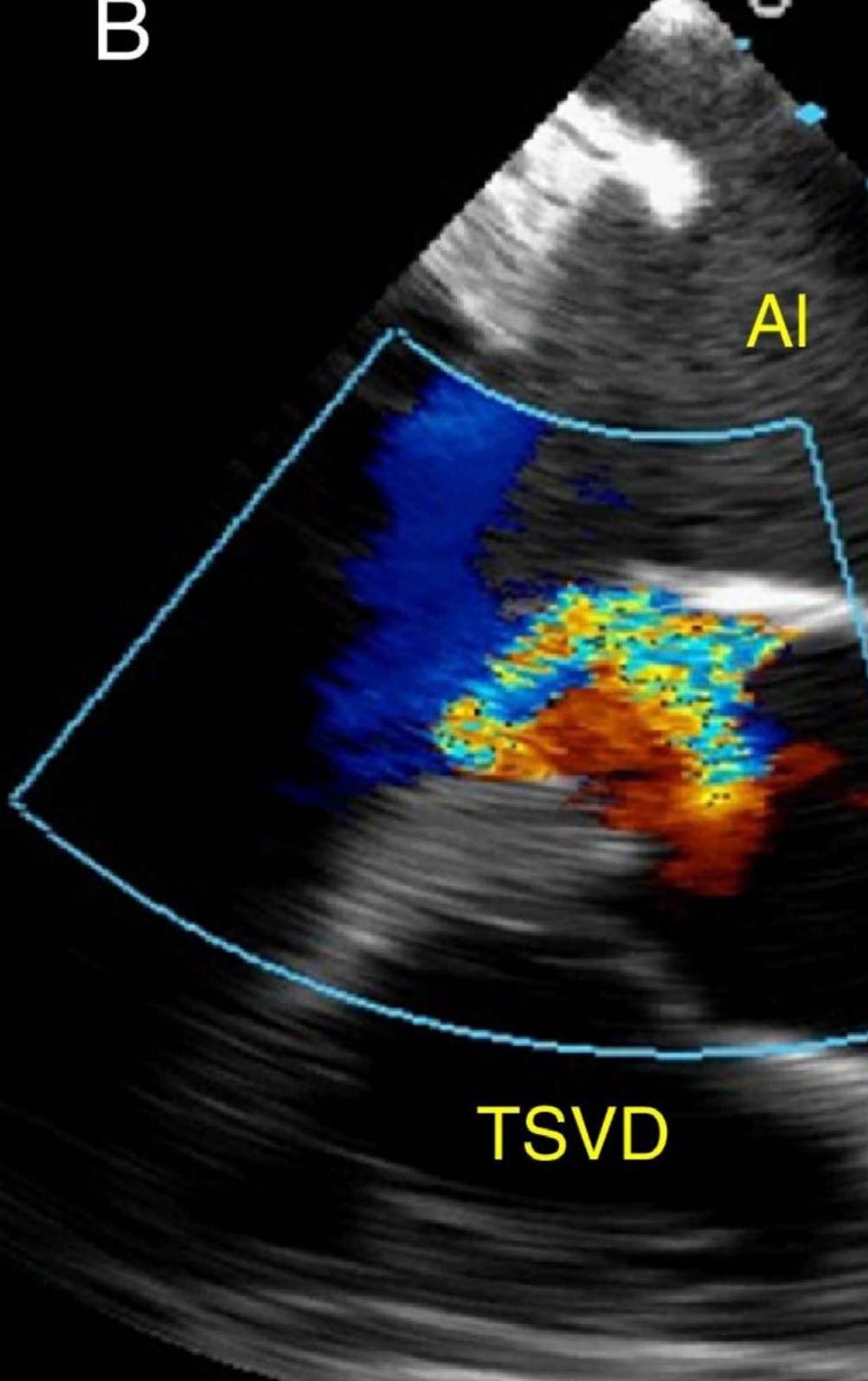
## Module 8. Valvular and Pericardial Involvement Related to Cardiotoxicity

- 8.1. Oncologic Treatments that May Lead to the Development of Valvulopathies
  - 8.1.1. Pharmacological Treatments
  - 8.1.2. Thoracic Radiotherapy
- 8.2. Management of Chronic Valvular Patients Receiving Oncologic Treatment
  - 8.2.1. Mitral Valve Disease
  - 8.2.2. Aortic Valve Disease
  - 8.2.3. Valve Prosthesis
- 8.3. Pharmacological Treatments that May Lead to the Development of Pericardial Disease
  - 8.3.1. Incidence and Physiopathology
  - 8.3.2. Clinical Presentation and Diagnosis
  - 8.3.3. Approach to Pericardial Effusion Secondary to Treatment
- 8.4. Thoracic Radiotherapy and Pericardial Disease
  - 8.4.1. Acute Pericarditis
  - 8.4.2. Chronic Pericarditis
- 8.5. Assessing Patients with Metastatic Pericardial Involvement

## Module 9. Arterial Hypertension as a Result of Oncologic Treatments

- 9.1. Clinical Relevance of Hypertension in Oncology Patients
- 9.2. Arterial Hypertension Associated with Antiangiogenic Drugs
  - 9.2.1. Incidence
  - 9.2.2. Pathophysiology
  - 9.2.3. Diagnosis
- 9.3. Other Treatments Associated with the Development of Arterial Hypertension
- 9.4. Treatment of Arterial Hypertension Related to Oncologic Treatment
- 9.5. Monitoring Strategy





## Module 10. Venous Thromboembolic Disease and Other Vascular Complications in the Oncology Patient

- 10.1. Venous Thromboembolic Disease in the Oncologic Patient: Clinical Significance
  - 10.1.1. Incidence
  - 10.1.2. Pathophysiology
  - 10.1.3. Risk Factors
- 10.2. Antineoplastic Treatments Associated with Increased Risk of Thromboembolic Disease
  - 10.2.1. Chemotherapy and Antiangiogenic Drugs
  - 10.2.2. Hormone Therapy
- 10.3. Prevention of Cancer-Related Venous Thromboembolic Disease
  - 10.3.1. Prevention Strategy in Outpatients with Active Oncology Treatment. Thrombotic Risk Scales
  - 10.3.2. Prevention Strategy in Hospitalized Patients
  - 10.3.3. Perisurgery Prevention Strategy
- 10.4. Venous Thromboembolic Disease Related to the Use of Central Venous Catheters
  - 10.4.1. Incidence
  - 10.4.2. Clinical Presentation
  - 10.4.3. Diagnostic Methods
  - 10.4.4. Treatment and Monitoring
  - 10.4.5. Prevention
- 10.5. Forms of Presentation and Diagnosis of Cancer-Associated Thromboembolic Disease
  - 10.5.1. Deep Vein Thrombosis
  - 10.5.2. Pulmonary Embolism
- 10.6. Treatment of Cancer-Associated Thromboembolic Disease
  - 10.6.1. Initial Treatment
  - 10.6.2. Extended Treatment
- 10.7. Management of Thromboembolic Disease in Special Situations
  - 10.7.1. Brain Tumors
  - 10.7.2. Obesity
  - 10.7.3. Renal Insufficiency
  - 10.7.4. Thrombopenia

- 10.8. Primary Prevention of Cardiovascular Disease in Cancer Patients
  - 10.8.1. Incidence and Risk Factors
  - 10.8.2. Implicated Drugs
  - 10.8.3. Clinical Diagnosis and Treatment
- 10.9. Cerebrovascular Disease
  - 10.9.1. Incidence and Risk Factors
  - 10.9.2. Implicated Treatments
  - 10.9.3. Clinical Diagnosis and Treatment
- 10.10. Pulmonary Hypertension
  - 10.10.1. Implicated Drugs Pathophysiology
  - 10.10.2. Clinical Diagnosis
  - 10.10.3. Treatment and Monitoring

### Module 11. Therapies with Cardioprotective Effects

- 11.1. Identification and Control of Cardiotoxicity Risk
  - 11.1.1. Treatment of Traditional Risk Factors
  - 11.1.2. Treatment of Comorbidities
- 11.2. Strategies to Limit Oncologic Drug-Related Cardiotoxicity
  - 11.2.1. Anthracyclines
  - 11.2.2. Monoclonal Antibodies. HER2 Inhibitors
  - 11.2.3. Cell Kinase Inhibitors
- 11.3. Strategies to Limit Cardiotoxicity Related to Thoracic Radiotherapy
- 11.4. Role of Beta-Blockers in Cardioprotection
- 11.5. Role of Angiotensin Receptor Inhibitors and Antagonists in Cardioprotection
- 11.6. Other Interventions with a Possible Cardioprotective Effect

### Module 12. Long-Term Monitoring Programs for Patients Who Have Received Cardiotoxic Therapies

- 12.1. Risk of Late Cardiotoxicity Secondary to Oncological Drugs
- 12.2. Monitoring Protocol for the Detection of Late Cardiotoxicity
- 12.3. Risk of Late Cardiotoxicity Secondary to Thoracic Radiotherapy
- 12.4. Monitoring Protocol for Detecting Late Radiation-Induced Toxicity

### Module 13. Complex Clinical Situations in the Context of Cardiotoxicity

- 13.1. Patient with Complex Cardiovascular Disease Requiring Oncologic Treatment
- 13.2. Patient with Oncologic Disease Presenting with an Acute Ischemic Event
- 13.3. Pediatric Patients in Need of Potentially Cardiotoxic Oncology Treatment
- 13.4. Geriatric Patients in need of Oncologic Treatment
- 13.5. Oncology Patients Requiring Anticoagulation or Anti-Aggregation
- 13.6. Oncology Patients who Exhibit Arrhythmias and Require Implantable Devices (Pacemakers, Defibrillators)

### Module 14. The Future of Cardio-Oncology: Most Relevant Lines of Research

- 14.1. Basic Research
- 14.2. Clinical Research
- 14.3. Gaps in Evidence and Future Research

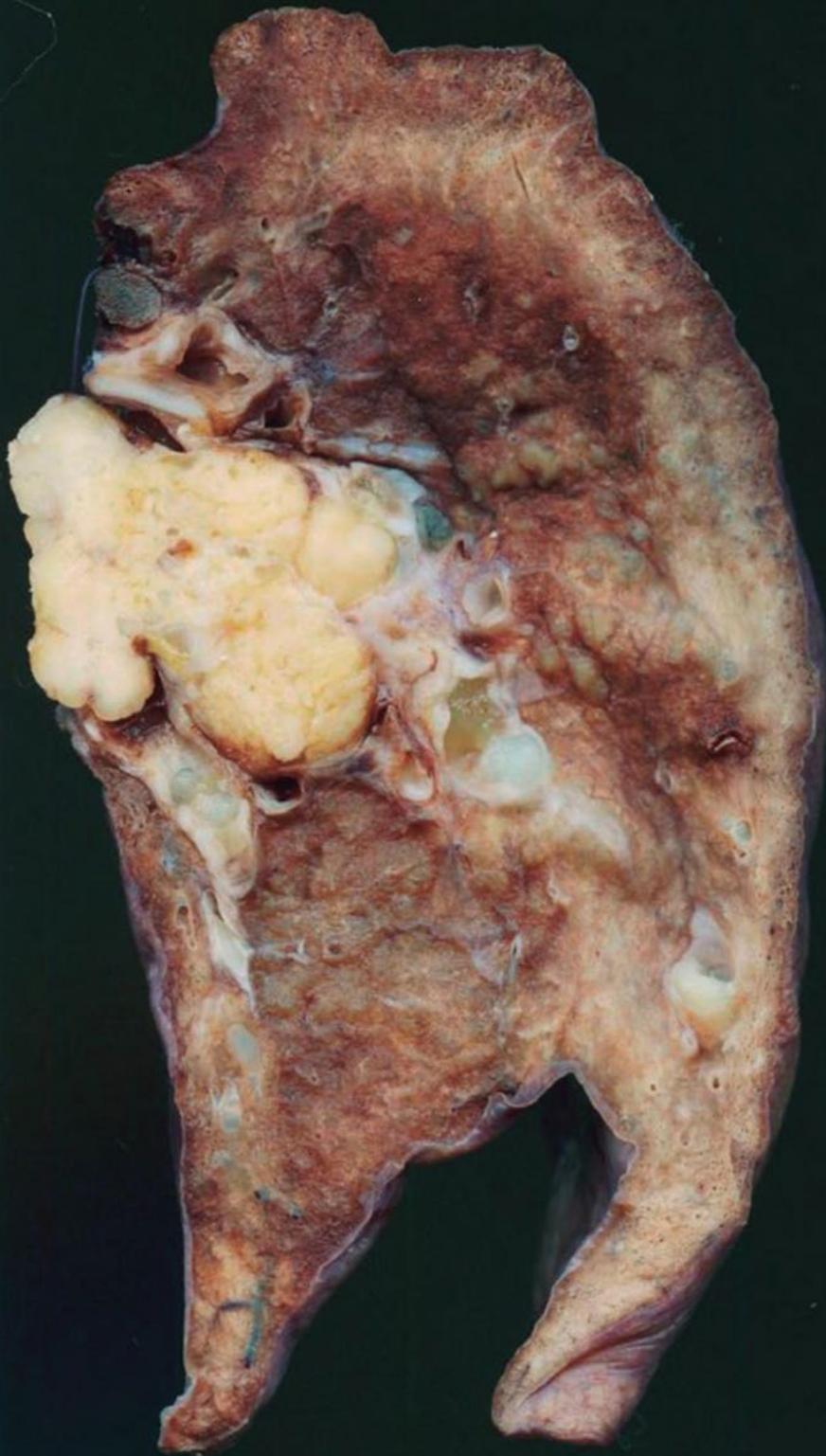
### Module 15. Multidisciplinary Cardio-Oncology Units

- 15.1. Objectives of the Cardio-Oncology Units
  - 15.1.1. Care Objectives
  - 15.1.2. Research Objectives
  - 15.1.3. Teaching and Dissemination Objectives
- 15.2. Components of Cardio-Oncology Equipment
  - 15.2.1. Coordination between the In-Hospital and Out-of-Hospital Environment
  - 15.2.2. Coordination between Different Healthcare Professionals

### Thoracic Oncology and Advanced Cardio-oncology Area

### Module 16. Etiology, Prevention and Screening

- 16.1. Risk Factors and Prevention
  - 16.1.1. Risk Factors
  - 16.1.2. Lung Cancer and Other Respiratory Diseases (COPD, OSAHS)
  - 16.1.3. Smoking Cessation
- 16.2. Solitary Pulmonary Nodule
  - 16.2.1. Definition and Etiology. Estimation of Malignancy
  - 16.2.2. Diagnostic Techniques in the Study of Solitary Pulmonary Nodules
  - 16.2.3. Sequential Evaluation. Management Algorithm
- 16.3. Screening
  - 16.3.1. Screening. Algorithm of Action
  - 16.3.2. Implementation of Screening in the Healthcare System



## Module 17. Translational Oncology

- 17.1. Molecular Biology
  - 17.1.1. Molecular Mechanisms of Cancer
  - 17.1.2. Tumor Immunology: Basis of Cancer Immunotherapy
  - 17.1.3. Microenvironment Reprogramming in Lung Cancer
- 17.2. Translational Oncology
  - 17.2.1. Understanding the New Technology: Next Generation Sequence (NGS) in Clinical Practice
  - 17.2.2. Therapeutic Targets in NSCLC
  - 17.2.3. Liquid Biopsies in NSCLC: The future is here
  - 17.2.4. Role of the Biobank in Clinical Research

## Module 18. Diagnosis and Staging

- 18.1. Clinical Diagnosis. Serum markers
  - 18.1.1. Clinical Diagnosis
  - 18.1.2. Paraneoplastic Syndromes
  - 18.1.3. Serum markers
- 18.2. Imaging Techniques
  - 18.2.1. Chest X-ray
  - 18.2.2. Computed Tomography (CT)
  - 18.2.3. Thoracic Ultrasound Scan
  - 18.2.4. Magnetic Resonance Imaging (MRI) in the Assessment of Thoracic Tumors
  - 18.2.5. Positron Emission Tomography (PET)
- 18.3. Cytohistological Studies
  - 18.3.1. Classification and Anatomopathological Study
  - 18.3.2. Non-Invasive Methods: Sputum Cytology
  - 18.3.3. Bronchoscopic Non-Surgical Invasive Techniques: Standard Bronchoscopy, Ultrasonography (EBUS-EUS), Electromagnetic Navigation and Others
  - 18.3.4. Transthoracic Non-Surgical Invasive Techniques: FNA, CNB, Thoracentesis and Pleural Biopsy
  - 18.3.5. The Role of the Interventional Pathologist in the Diagnosis of Advanced Stage Lung Cancer
  - 18.3.6. Invasive Staging in Lung Cancer
- 18.4. Functional and Staging Assessment
  - 18.4.1. Preoperative Study of Surgical Risk
  - 18.4.2. The Eighth Edition of TNM Classification of Lung Cancer

## Module 19. Basis of Treatment in Thoracic Oncology

- 19.1. Basis and Experience of Surgical Treatment
  - 19.1.1. Video-Assisted Thoracic Surgery. General Aspects
  - 19.1.2. Robotic Surgery in the Treatment of Lung Cancer and Other Thoracic Tumors
  - 19.1.3. Approach Routes to the Thorax
  - 19.1.4. Lobectomy in the Treatment of Thoracic Tumors. Indications and Technique
  - 19.1.5. Minor Resections in the Treatment of Thoracic Tumors
  - 19.1.6. Pneumonectomy
  - 19.1.7. Bronchoplastic Resections
  - 19.1.8. Angioplastic Resections
  - 19.1.9. Tracheal and Carinal Resection in Lung Cancer and Tracheal Tumors
  - 19.1.10. Lymphadenectomy
- 19.2. Basis and Experience of Surgical Treatment
  - 19.2.1. Evolution of Radiation Therapy for Thoracic Tumors: from 3D conformal radiotherapy to IMRT/VMAT
  - 19.2.2. Stereotactic Radiotherapy
  - 19.2.3. Pulmonary Brachytherapy
  - 19.2.4. Proton Therapy for Locally Advanced Disease
- 19.3. Clinical trials in the Era of Personalized Oncology
  - 19.3.1. Clinical Trials: Definitions, Examples, and Interpretation of the Literature
  - 19.3.2. How to Design a Clinical Trial in Lung Cancer
  - 19.3.3. Real World Data Studies: Generating Knowledge

## Module 20. Localized and Locally Advanced Stage Non-Small Cell Lung Carcinoma

- 20.1. Early-stage NSCLC (I-II)
  - 20.1.1. Surgical Algorithm: Technique Selection
  - 20.1.2. Non-surgical Algorithm: Stereotactic Radiotherapy (SBRT)
  - 20.1.3. Current Best Practice for Adjuvant Radiotherapy
  - 20.1.4. Current Best Practice for Adjuvant Chemotherapy
- 20.2. NSCLC in Advanced Stage (IIIA-IIIB)
  - 20.2.1. Management of Stage IIIA NSCLC
  - 20.2.2. Management of Stage IIIB NSCLC
  - 20.2.3. Radical Radiotherapy in Stage III NSCLC
  - 20.2.4. Concurrent and Sequential Chemotherapy Options in Stage III NSCLC
  - 20.2.5. Toxicity of Radiochemotherapy
- 20.3. Tumor Pancoast
  - 20.3.1. Diagnosis and Evaluation of Upper Lobe Tumors
  - 20.3.2. Surgical Approach to Sulcus Tumors
  - 20.3.3. Multidisciplinary Management of Upper Lobe Tumors

## Module 21. Disseminated Stage Non-Small Cell Lung Carcinoma

- 21.1. NSCLC in Metastatic Stage. Targeted Therapy in the Treatment of NSCLC
  - 21.1.1. Differentiation between the Treatment of Squamous Carcinoma of Lung A Adenocarcinoma
  - 21.1.2. Therapeutic Algorithm for NSCLC
- 21.2. Angiogenic and Targeted Therapy in the Treatment of NSCLC
  - 21.2.1. Angiogenic Therapies in the Management of NSCLC
  - 21.2.2. Targeted Therapy for EGFR-Positive Advanced Disease
  - 21.2.3. Rebiopsy Recommendations After Progression to EGFR-TKIs
  - 21.2.4. Management of EGFR-Resistant Disease
  - 21.2.5. EML4 / ALK, ROS-1: Therapeutic Implications
  - 21.2.6. Mechanisms of Resistance to ALK Inhibitors
  - 21.2.7. Potential and Progress in KRAS, HER2, BRAF, PI3K, MET, TRK and RET Selection
  - 21.2.8. PDL1 Are PDL1 Tests Interchangeable?

- 21.2.9. Clinical Experience and Current Recommendations for Immunotherapy
- 21.2.10. Immunotherapy in Patients with PD-L1-Negative NSCLC
- 21.2.11. Immunotherapy Beyond Immune-Control Inhibitors
- 21.2.12. The Role of Immunotherapy in Small Cell Lung Cancer and Other Thoracic Tumors
- 21.2.13. Monitoring and Management of Immune Related Adverse Events

### 21.3. Oligometastatic Disease

- 21.3.1. Management of Oligometastatic Disease
- 21.3.2. Role of Surgery in Oligometastatic Disease
- 21.3.3. Stereotactic Radiotherapy in Extracranial Oligometastatic Disease
- 21.3.4. Fractionated Stereotactic Radiotherapy in Oligometastatic Brain Tumors

## Module 22. Microcytic Carcinoma of the Lung and Neuroendocrine Tumors

### 22.1. Microcytic Carcinoma of the Lung

- 22.1.1. Multidisciplinary Management of Localized Disease
- 22.1.2. Role of Radiotherapy in Microcytic Lung Carcinoma of the Lung
- 22.1.3. Management of Disseminated Disease
- 22.1.4. Prophylactic Cranial Radiotherapy (PCR) in Microcytic Lung Carcinoma of the Lung

### 22.2. Neuroendocrine Tumors of the Lung

- 22.2.1. Molecular Biology Approach to Low and Intermediate Grade Neuroendocrine Tumors of the Lung
- 22.2.2. Clinical Management Algorithm for Bronchial Carcinoid Tumors
- 22.2.3. Surgical Treatment for Pulmonary Neuroendocrine Tumors

## Module 23. Tumors of the Pleura, Mediastinum and Thoracic Wall

### 23.1. Malignant Mesothelioma

- 23.1.1. Role of Surgery in Malignant Mesothelioma and Other Pleural Tumors
- 23.1.2. Role of Radiotherapy in Malignant Mesothelioma
- 23.1.3. Advanced Malignant Mesothelioma Treatment

### 23.2. Mediastinal Tumors

- 23.2.1. Prognostic and Predictive Value of the Pathologic Classification of Thymomas
- 23.2.2. Role of Surgery in the Treatment of Mediastinal Tumors
- 23.2.3. Role of Radiotherapy in Thymoma
- 23.2.4. Multidisciplinary Approach in Advanced Thymoma
- 23.2.5. New Treatments for Malignant Thymoma

### 23.3. Thoracic Wall Tumors

- 23.3.1. Clinic and Diagnosis of Primitive Thoracic Wall Tumors
- 23.3.2. Surgical Treatment for Primitive Thoracic Wall Tumors

### 23.4. Treatment of Pulmonary Metastases from Other Tumors

- 23.4.1. Indications for Surgical Treatment of Pulmonary Metastases from Other Tumors
- 23.4.2. Surgical Technique in the Treatment of Pulmonary Metastases from Other Tumors
- 23.4.3. Fractionated Stereotactic Radiotherapy of Pulmonary Metastases from Other Tumors

### 23.5. Relapses and Second Tumors

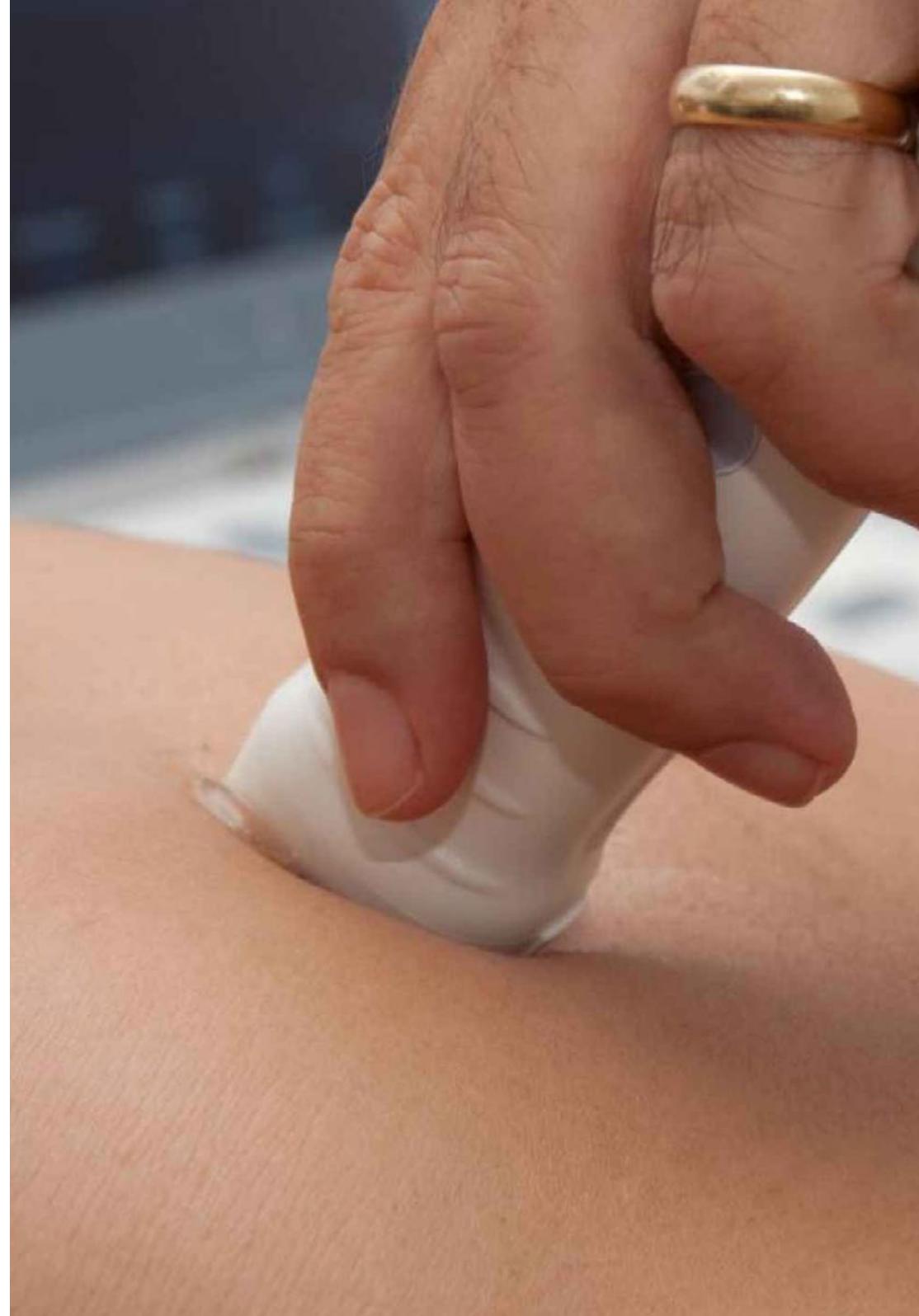
- 23.5.1. Detection of Relapses and Second Tumors
- 23.5.2. Treatment of Relapses and Second Tumors

## Module 24. Collaboration in the Management of Oncology Patients

- 24.1. Palliative Management
  - 24.1.1. Palliative Care: from Pre-Oncology valoracion to End-of-Life Care
  - 24.1.2. Informed Consent: Are We Really Informing Our Patients?
  - 24.1.3. Palliative Management of Symptoms in Lung Cancer
  - 24.1.4. Palliative Endoscopic Treatments
  - 24.1.5. Palliative Surgical Treatment
  - 24.1.6. Why do Lung Cancer Present to the Emergency Department and How Can Outcomes Be Improved?
- 24.2. Emergencies and Comorbidities
  - 24.2.1. Palliative Radiotherapy in Brain Metastases, Spinal Cord Compression, Vena Cava Syndrome and Hemoptysis
  - 24.2.2. Acute Management of the Patient with a Thoracic Tumor
  - 24.2.3. Management of Respiratory Comorbidities
  - 24.2.4. Management of Infectious Comorbidities
  - 24.2.5. Management of Cardiovascular Comorbidities
  - 24.2.6. Neurologic Comorbidity Management
  - 24.2.7. Management of Endocrinological Comorbidities
  - 24.2.8. Management of Nutritional Comorbidities
  - 24.2.9. Lung Cancer in the Elderly
  - 24.2.10. Outpatient Care of Patients with Thoracic Oncological Pathology
  - 24.2.11. Prescription of Physical Exercise in the Oncologic Patient. Prehabilitation

## Module 25. From Clinical Management to Networking

- 25.1. Clinical Management in a Thoracic Tumor Unit
  - 25.1.1. Basis of Clinical Management
  - 25.1.2. Members and Functions of a Multidisciplinary Team
  - 25.1.3. Decision-Making in a Multidisciplinary Committee
- 25.2. Improving Networking
  - 25.2.1. Technological Platforms for Patient Monitoring and Control
  - 25.2.2. The Collaborative On-line World
  - 25.2.3. Decision Support Systems in Oncology Based on Artificial Intelligence
  - 25.2.4. Use of Big Data in Thoracic Oncology





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*A unique specialization experience,  
key and decisive to boost your  
professional development”*

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# 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.





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*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

What should a professional do in a given situation? 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 physician's professional practice.

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

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

1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that evaluate 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.



## 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.

*Professionals will learn through real cases and by resolving 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, more than 250,000 physicians have been trained with unprecedented success in all clinical specialties regardless of surgical load. 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.

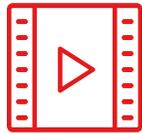
*Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.*

In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). 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.



#### Surgical Techniques and Procedures on Video

TECH introduces students to the latest techniques, the latest educational advances and to the forefront of current 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

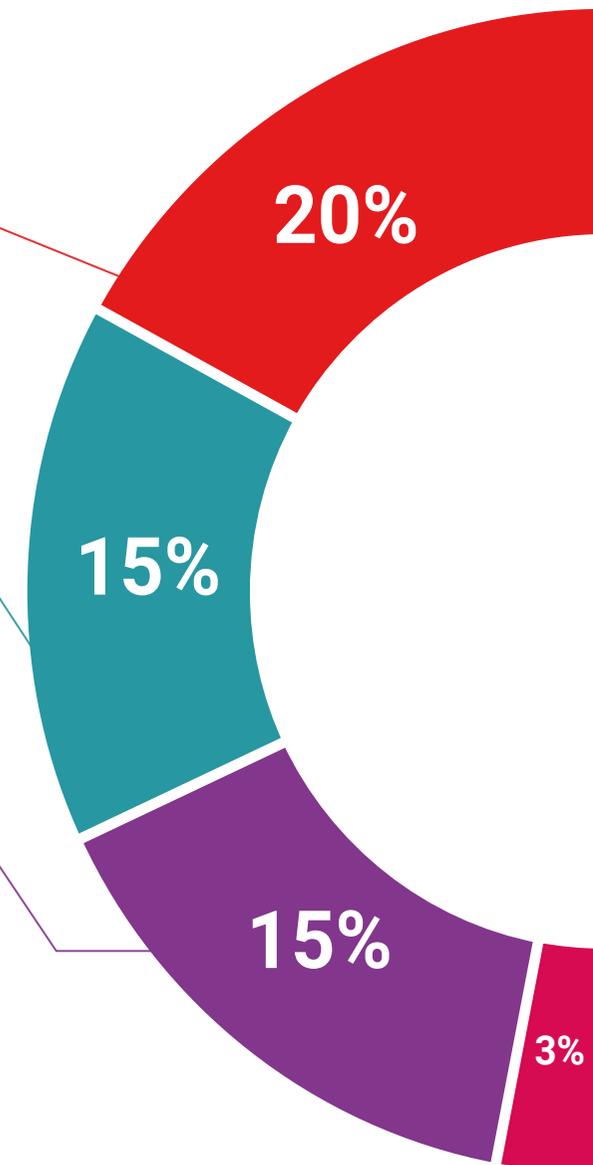
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

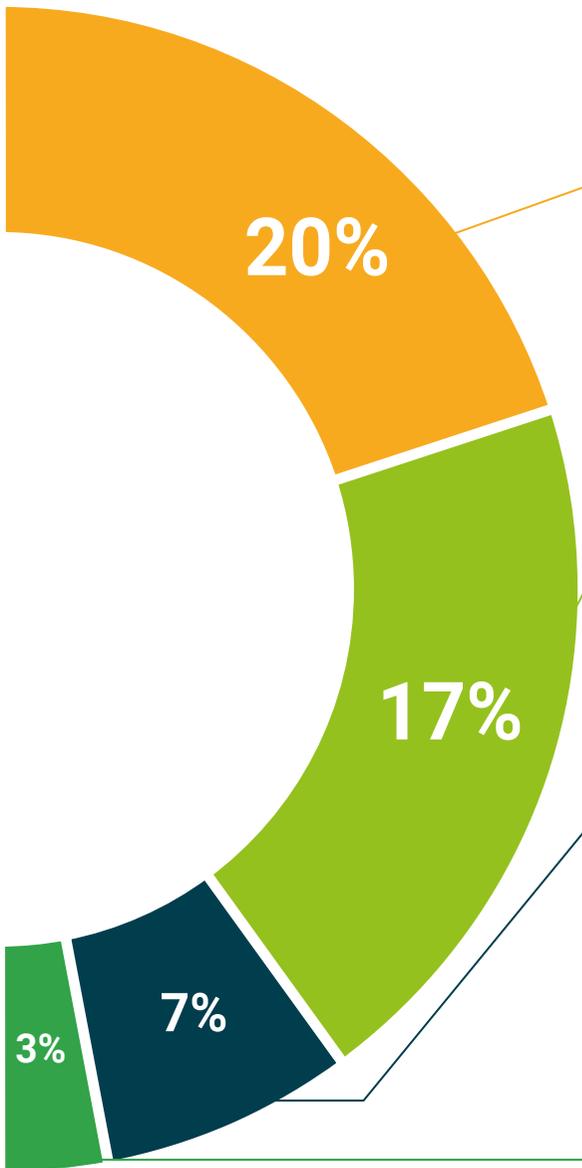
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### 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 on the usefulness of learning by observing experts. The system known as 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 Advanced Master's Degree in Thoracic Oncology and Cardio-Oncology guarantees students, in addition to the most rigorous and up-to-date education, access to a Advanced Master's Degree diploma issued by TECH Global University.



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*This Advanced Master's Degree in Thoracic Oncology and Cardio-Oncology is the largest compendium of knowledge in the industry: A degree that will be a high-quality added value for any professional in this area"*

This program will allow you to obtain your **Advanced Master's Degree in Thoracic Oncology and Cardio-Oncology** 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.

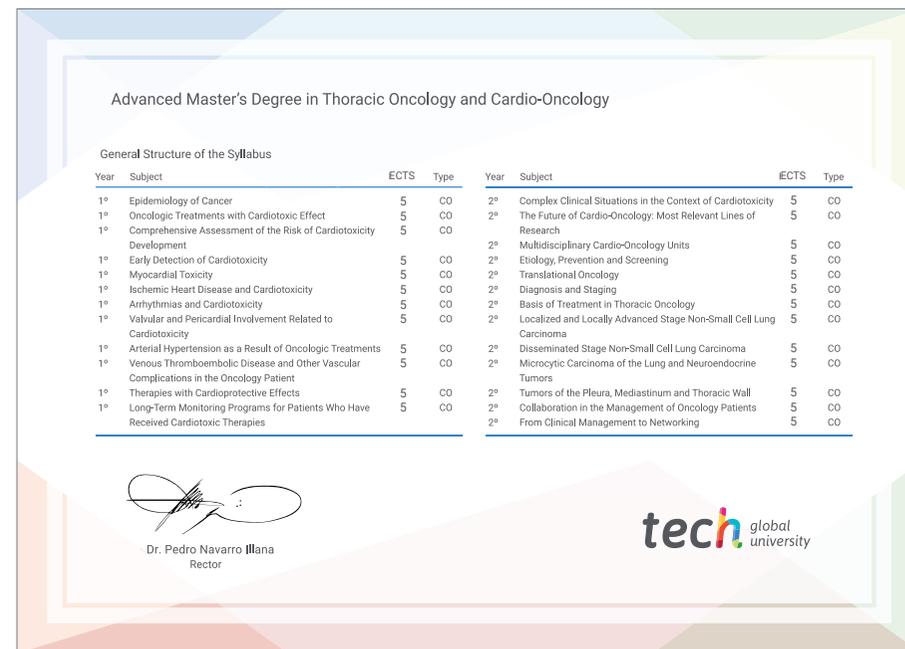
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Advanced Master's Degree in Thoracic Oncology and Cardio-Oncology**

Modality: **online**

Duration: **2 years**

Accreditation: **120 ECTS**



\*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.



## Advanced Master's Degree

Thoracic Oncology  
and Cardio-Oncology

- » Modality: online
- » Duration: 2 years
- » Certificate: TECH Global University
- » Credits: 120 ECTS
- » Schedule: at your own pace
- » Exams: online

# Advanced Master's Degree Thoracic Oncology and Cardio-Oncology