

# Máster's Degree in Transcatheter Therapies



From November 2, 2023 to June 30, 2024.



Own Title San Pablo Andalucía CEU Foundation.



# Máster's Degree in Transcatheter Therapies



CEU

*Fundación San Pablo  
Andalucía*

Modality: **Blended**

Duration: **12 months.**

Own title.: San Pablo Andalucía CEU Foundation

Credits: **60 ECTS equivalent credits.** (European Credit Transfer and Accumation System)

Teaching hours.: **1.500h**

Web site: **[www.mastertranscateter.com](http://www.mastertranscateter.com)**

In collaboration with:



SECCE



Fundación  
Cirugía y Corazón



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# 01

## Presentation

Dear friends:

The Master in Transcatheter Therapies, a title of the San Pablo Andalucía CEU Foundation and the Spanish Society of Cardiovascular and Endovascular Surgery, reaches its 2nd edition after a first one of complete success in participation and training.

In the satisfaction survey carried out at the end of the Master's degree, 72% of the students consider that the Master's degree has met their expectations; 78% affirm that its duration has been very appropriate to the content, 89% are very satisfied with the teachers chosen to teach each of the subjects; and 83% recognize that the master's degree has been very useful for their training.

But one of the most positive evaluations of this first edition have been the face-to-face sessions held, due to the enormous number of simulators gathered for practices, due to the possibility of seeing live cases or dozens of canned cases. At the end of this edition, a club has been established where cases continue to be shared or students who have been part of this edition are invited so that they can attend any endovascular intervention, participating as another surgeon.

The disciplines that have the cardiovascular anatomical area as their common focus encompass different specialties that share areas of competence. Specifically, cardiovascular surgery, angiology and vascular surgery, as surgical specialties, as well as cardiology and radiology as clinical specialties. Standardized training in this new field, which emerged along the lines of different specialties, requires precise training standards and common areas of competence.

The continuous advance in cardiovascular therapies forces heart and vascular professionals to stay up to date on these catheter-guided endovascular procedures.

This Master's Degree, which remains the only one that exists in Europe and Latin America, is the result of the work of nearly 100 professors from different countries.

The Master's program is taught semi-face-to-face and is structured into 8 theoretical modules lasting nine months (students must take 60 ECTS credits where the TFM is mandatory), divided into two areas: valvular plus cardiac and vascular structural. Although if the student deems it appropriate, they can focus on one of them, with which upon completion they would obtain the title of Transcatheter Valve Specialist (29 ECTS credits). To these 8 modules we must add two face-to-face sessions lasting two days each, eminently practical, with workshops, simulators, recorded clinical cases and live cases..



We understand that the only way to learn in the field of cardiovascular interventionism is to use practice as a solution to the learning problem. It is not just about knowing the new techniques, but about learning them by using them.

The Master in Transcatheter Therapies begins on November 2, 2023 and ends on June 30, 2024.

And at the end of the study program, our students will have acquired skills that will allow them to have extensive and advanced knowledge of transcatheter techniques. In addition to being able to transfer their knowledge to any cardiovascular surgery, cardiology, radiology or vascular surgery unit.

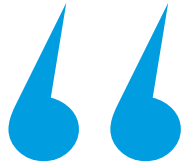
Official training offers students the qualification of a specialist in Cardiovascular Surgery, Cardiology, Vascular Surgery or Radiology, but it does not always qualify them to perform transcatheter techniques. However, the market demands these trained professionals. In this case, we have the support of an institution like CEU, the endorsement of the Spanish Society of Cardiovascular and Endovascular Surgery and the participation of nationally and internationally renowned professionals from all the specialties involved in transcatheter procedures in the cardiovascular area.

To expand the information on this Master, you can do so at: [www.mastertranscater.com](http://www.mastertranscater.com).

**Miguel A. Gómez Vidal**  
Director of the Master.

**José M. Garrido Jiménez**  
Codirector of the Master.

**Xavier Ruyra-Baliarda**  
Codirector of the Master.



*This master allows you to run in environments simulated that provide learning immersive programmed to train before real situations.*

*Provides clinical cases to bring closer maximum program development to the reality of medical care.*

*It includes in its teaching staff professionals belonging to the field of cardiovascular surgery, angiology, cardiology, interventional radiology, anesthesiology and virtual reality, who pour their work experience into this training, in addition to recognized specialists belonging to companies scientific references.*



# 02

## General Objectives

*At the end of this Master, each participant must be able to:*

- 🗣️ Know the most advanced techniques in the percutaneous treatment of valvular heart disease. Theoretical knowledge and practical examples.
- 🗣️ Identify candidates for transcatheter interventional techniques on heart valves.
- 🗣️ Know and develop cardiac imaging techniques in structural interventionism.
- 🗣️ Plan transcatheter valve procedures in detail.
- 🗣️ Anticipate, prevent and know how to resolve complications related to transcatheter valve procedures.
- 🗣️ Know the evolution and follow-up of patients undergoing these procedures.
- 🗣️ Know the most advanced techniques in the endovascular treatment of arterial and venous pathology. Theoretical and practical knowledge.
- 🗣️ Identify and choose the most appropriate technique, prosthesis and catheters for each procedure.
- 🗣️ Select the appropriate patient. Vascular transcatheter intervention versus open surgical procedure.
- 🗣️ Plan in detail endovascular procedures aimed at the treatment of vascular, arterial and venous disease.
- 🗣️ Know the complications related to transcatheter vascular procedures. Early diagnosis and appropriate management.

# 03

## Specific Objectives.

### Get to do:

#### VALVE AREA.

- 🗣️ Learn in detail about the most current implant devices and transcatheter prostheses in valvular pathology.
- 🗣️ Prepare, plan and perform transcatheter aortic valve implantation (TAVI) procedures.
- 🗣️ Prepare, plan and perform percutaneous treatment procedures for mitral insufficiency.
- 🗣️ Prepare, plan and perform transcatheter mitral valve implantation procedures.
- 🗣️ Prepare, plan and perform percutaneous procedures on the tricuspid valve.
- 🗣️ Prepare, plan and perform percutaneous procedures on the pulmonary valve.
- 🗣️ Prepare, plan and perform valve-in-valve procedures.

#### VASCULAR AREA.

- 🗣️ Achieve standardization of the procedure and advanced knowledge of endovascular treatment of the thoracic aorta.
- 🗣️ Address Acute Aortic Syndrome endovascularly: Aortic Dissection, Intramural Hematoma and Penetrating Ulcer.
- 🗣️ Achieve standardization of the procedure and advanced knowledge of the treatment of aneurysmal and occlusive disease and the endovascular approach to the abdominal aorta.
- 🗣️ Address peripheral arterial disease endovascularly.
- 🗣️ Achieve venous vascular pathology to be addressed by endovascular procedure. Advanced phlebology.





04

## Master's Direction.



**Miguel Ángel Gómez Vidal**  
Cardiovascular Surgery. Puerta del Mar University Hospital. Cádiz  
Director of the Master



**José Manuel Garrido Jiménez**  
Cardiovascular Surgery. Virgen de las Nieves University Hospital. Grenade  
Co-director of the Master.



**Xavier Ruyra - Baliarda**  
Cardiovascular Surgery. Teknon Medical Center. Barcelona  
Co-director of the Master.



# 05

## Faculty

**Omar Araji Tiliani**

Cardiovascular Surgery. Virgen Macarena University Hospital. Seville

**Pedro Aranda Granados**

Cardiovascular Surgery. Regional University Hospital. Malaga.

**Alberto Bouzas Mosquera**

Cardiovascular Surgery. A Coruña University Hospital Complex

**Jordi Broncano Cabrero**

Cardiothoracic Imaging Unit. Sant Joan de Déu University Hospital. Barcelona

**Borja Castejón Navarro**

Angiology and Vascular Surgery. Ruber International Hospital. Madrid

**Javier Cobiella Carnicer**

Cardiovascular Surgery. San Carlos Clinical Hospital. Madrid

**Rosario Conejero Gómez**

Angiology and Vascular Surgery. Puerta del Mar University Hospital. Cádiz

**Antonella Craven-Bartle**

Angiology and Vascular Surgery. Puerta del Mar University Hospital. Cádiz

**Corrado Tamburino**

Cardiology. Ospedale Ferraritto-Policlinico Universitario di Catania. Italy

**Tomás Daroca Martínez**

Cardiovascular Surgery. Puerta del Mar Hospital. Cádiz

**Mariano de Blas Bravo**

Interventional Radiology. Donostia University Hospital. Saint Sebastian



**José Díaz Fernández**

Cardiology. Virgen del Rocío University Hospital. Seville

**Artur Evangelista Masip**

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Cardiothoracic Surgeon. Arizona Heart & Lung Surgery, Phoenix. Arizona

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Cardiovascular Surgery. Puerta del Mar University Hospital. Cádiz

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Cardiovascular Surgery. Badajoz University Hospital

**Manuel González Correa**

Cardiology. Virgen de Valme University Hospital. Seville

**Dr. Encarnación Gutiérrez Carretero**

Cardiovascular Surgery. Virgen del Rocío University Hospital. Seville

**Tomás Heredia Cambra**

Cardiovascular Surgery. La Fe University Hospital. Valencia

**Ignasi Julià Amill**

Cardiovascular Surgery. Germans Trias i Pujol Hospital. Barcelona

**Víctor Herrera Terrada**

Virtual reality. TecherTeam. Valencia

**Ali Khoynzhad**

Cirugía Cardiovascular. Long Beach Medical Center, Los Angeles. California

**J.E. López Haldón**

Cardiology. Virgen del Rocío University Hospital. Seville

**Manuel Maynar Moliner**

Radiology. Hospiten Rambla Hospital. Tenerife

**Francesco Maisano**

Cardiovascular Surgery. San Raffaele Hospital. Milan

**Francisco Javier Martínez Gámez**

Angiology and Vascular Surgery. Jaén Hospital Complex

**Nilo Mosquera Arochena**

Angiology and Vascular Surgery. University Hospital Complex of Santiago de Compostela

**Víctor X. Mosquera Rodríguez**

Cardiovascular Surgery. A Coruña University Hospital Complex

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Radiology. Regional University Hospital. Malaga

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Cardiovascular Surgery. Virgen Macarena University Hospital. Seville

**Manuel Villa Gil-Ortega**

Cardiology. Virgen del Rocío University Hospital. Seville

**Alberto Weber**

Cardiovascular Surgery. HerZentrum Hirslanden. Zurich

**Michael Oscar Zembala**

Cardiovascular Surgery. Zabrze. Poland

**Santiago Zubicoa Ezpeleta**

Angiology and Vascular Surgery. Ruber International Hospital. Madrid

**José Luis Zunzunegui Martínez**

Cardiology. Gregorio Marañón Maternal and Child Hospital. Madrid



# 06 Schedule

## MODULE 1.

### BASES OF TRANSCATHETER THERAPIES

Coordinator: **Dr. Tomás Daroca Martínez**

From 11/02/2023 to 11/26/2023

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Topic 1. Basic materials: Guides, catheters, introducers, balloons: description and appropriate selection for each procedure.

**Dr. Tomás Daroca Martínez**

Topic 2. Percutaneous access techniques: ultrasound-guided, radio-guided, open puncture. Advantages, disadvantages, strategies. Percutaneous closure systems.

**Dra. Rosario Conejero Gómez**

Topic 3. Transseptal access technique.

**Dr. Juan Manuel Fernández Gómez**

Topic 4. Brain protection systems in transcatheter procedures.

**Dr. Ángel Sánchez-Recalde**

- Anatomy and physiology TSAo.
- Causes of stroke in transcatheter procedures.
- When, how and why to use brain protection devices.
- Current devices: advantages and disadvantages.

Topic 5. Imaging techniques: Radioscope and Angiotac. NMR: Image fusion. Technical characteristics, handling and usefulness.

**Dr. Jordi Broncano Cabrero**

- Radioscopes: mobile, fixed: technical characteristics and handling.
- AngioTAC image acquisition: needs and characteristics.
- Acquisition of NMR images: needs and characteristics.

Topic 6. TEE: Utility in transcatheter procedures: characteristics and projections used. Motorize transcatheter procedures.

**Dr. Alberto Bouzas Mosquera**

- Bases of transesophageal echocardiography.

# 06 Schedule

## MODULE 2.

### PLANNING OF TRANSCATHETER THERAPIES.

Coordinator: **Dr. Miguel Ángel Gómez Vidal**

From 27/11/2023 to 07/01/2024

**Topic 7. Technical requirements for transcatheter procedures.**

**Dr. José Manuel Garrido Jiménez**

- Cardioteam: necessary, mandatory.
- Setting of hybrid rooms or operating rooms.
- Organization of equipment and staff.

**Topic 8. Intra- and perioperative care in transcatheter procedures.**

**Dr. Antonio Ramón Fernández López**

- Anesthetic options: minimalism.
- Safety or effectiveness of procedure.
- Post-procedure care and surveillance.

**Topic 9. Importance of CT angiography in transcatheter planning of the aortic valve.**

**Dr. Omar Araji Tiliani**

- Aortic valve: anatomy-physiology of the aortic valve, ultrasound analysis, CT angiography analysis.
- Management of TAC software for valves:
  - a) How to measure necessary measurements: ring, distances to ostium, accesses.
  - b) CT-anatomy correlations.

**Topic 10. Transcatheter planning for aortic pathology.**

**Dr. Mariano de Blas Bravo**

- Aorta and peripheral vascular: anatomo-physiology of the aorta and FP of the main pathologies (aneurysmal and dissection).
- Usefulness of different imaging tests in case planning and measurements.
- Management of CT software for aorta.

**Topic 11. Utility of virtual reality and artificial intelligence**

**Dr. Víctor Herrera Terrada**

# 06 Schedule

## MODULE 3.

### TRANSCATHETER THERAPY ACCESS ROUTES.

Coordinator: **Dr. Tomás Heredia Cambra**

From 01/08/2024 to 01/28/2024

#### Topic 12. Transapical access.

**Dr. José Ramón González Rodríguez**

- Transapical access for TAVI.
- Transapical access for antegrade release of aortic endoprostheses.
- Transapical access: alternative to through-and-through.
- Future perspectives: closure systems and novel approaches.
- a) Release of aortic endoprostheses via antegrade route: alternatives and techniques.
- b) Antegrade release of peripheral devices.

#### Topic 13. Retrograde arterial access I.

**Dr. Tomás Heredia Cambra**

- Axillary-subclavian access.
- Access to other supraortic trunks: cervicotomy and supraclavicular access.
- Direct aortic access: ministernotomy and right anterior minithoracotomy.
- Iliac access and transcaval access.

#### Topic 14. Retrograde arterial access II.

**Dr. Jorge Sanz Sánchez**

- Routine femoral access: modus operandi.
- Techniques for optimization and expansion of use of femoral access.
- Pre-implantation peripheral arterial intervention.
- Calcium fragmentation techniques.

# 06 Schedule

## MODULE 4.

### TRANSCATHETER AORTIC VALVE THERAPY.

Coordinator: **Dr. Xavier Ruyra-Baliarda**  
From 01/29/2024 to 02/25/2024

**Topic 15. Anatomical-physiology of the aortic valve complex. Surgical options for the treatment of aortic valve disease. TAVI phenomenon: past, present and future.**

**Dr. Xavier Ruyra-Baliarda**

**Topic 16. Clinical guidelines and most recent literature review.**

**Dr. Eduard Permanyer Boada**

- Trials Analysis I – High and prohibitive surgical risk patients.
- Trials Analysis II – Intermediate and low surgical risk patients.
- Critical Trial Analysis: Valve interventions.
- VARC-2/VARC-3/VIVID Group Analysis: Degenerative valve diseases.

**Topic 17. Patient selection.**

**Dr. Eduard Permanyer Boada**

- Indications for AVR and TAVI.
- Risk stratification.
- Assessment of fragility.
- Patient decision.

**Topic 18. Prosthesis selection: Self-expandable vs. balloon-expandable.**

**Dr. Ignasi Julià Amil**

**Topic 19. Description of current prostheses and release systems.**

**Dr. José F. Díaz - Dra. Rosa M. Cardenal**

**Topic 20. TAVI procedure: step by step. Tips and tricks.**

**Dr. Miguel Ángel Gómez Vidal**

**Topic 21. TAVI I complications: Prevention and treatment of AV block, neurological, ring rupture, need for CPB or emergent surgery.**

**Dr. Xavier Ruyra-Baliarda**

**Topic 22. TAVI II complications: vascular complications, peri leaks, embolization.**

**Dr. Corrado Tamburino**

**Topic 23. Complex situations in TAVI implants, low coronary ostia, recumbent aortas, VinV, Tavi in ??Tavi.**

**Dr. José Manuel Garrido Jiménez**



06

## Schedule

### MODULE 5.

#### TRANSCATHETER THERAPIES OF THE MITRAL VALVE.

Coordinator: **Dr. Javier Cobiella Carnicer.**

From 02/26/2024 to 03/31/2024

Topic 24. Anatomy-physiology of the mitral valve complex. Indications and current status of transcatheter procedures.

**Dr. Alberto Weber**

Topic 25. TMVR: type and description of current prostheses, procedure planning, indications and implant techniques.

**Dr. Maurizio Taramasso**

Topic 26. TMVR with aortic prosthesis: Valve in Valve, Valve in ring.

**Dr. Christian Muñoz**

Topic 27. Edge to edge mitral repair: types of devices, indications and implantation techniques.

**Dr. Manuel Villa Gil-Ortega**

Topic 28. Mitral repair with neochords: type of devices, indications and implantation techniques.

**Dr. Javier Cobiella Carnicer**

Topic 29. Transcatheter mitral annuloplasty: type of devices, indications and implantation techniques.

**Dr. Maurizio Taramasso**

# 06 Schedule

## MODULE 6.

### TRANSCATHETER TRICUSPID AND PULMONARY VALVE THERAPIES.

Coordinator: **Dr. José Manuel Garrido Jiménez.**

From 04/01/2024 to 05/05/2024

Topic 30. Current status of transcatheter tricuspid valve surgery: indications and planning of the procedure.

**Dr. José Manuel Garrido Jiménez**

Topic 31. Transcatheter devices for tricuspid valve: types and description.

**Dr. Francesco Maissano**

Topic 32. Tricuspid repair: CLIP and TRICUSPID RING: types and description of the technique.

**Dr. Francesco Maissano**

Topic 33. Current status of transcatheter pulmonary surgery.

**Dr. José Luis Zunzunegui Martínez**

Topic 34. Transcatheter therapy in chronic heart failure: Parachute, Revivent. Arterial shunt devices.

**Dr. Tomás Daroca Martínez**

Topic 35. Transcatheter developments in cardiac electrostimulation: Micron and left bundle branch stimulation.

**Dr. Juan Manuel Fernández Gómez**

Topic 36. Transcatheter planning of non-valvular structural defects.

- Lug closure

Dr. José Díaz Fernández and Dr. José Eduardo López Haldón

a) Closure of OI, when and why.

b) Anatomy-physiology of the OI.

c) Procedure, device selection and step-by-step planning.

- Closure of FOP and CIA.

Dr. Pastor Luis Pérez Santigosa and Dr. Manuel González Correa

a) Closure of FOP and CIA, when and why.

b) Anatomophysiology of FOP and CIA.

c) Procedure, device selection and step-by-step planning.

- Closure of periprosthetic leaks

Dr. Fernando Sarnago Cebada and Dr. José Antonio García Robles

a) Closure of leaks, when and why.

b) Procedure, device selection and step-by-step planning.

06

## Schedule

### MODULE 7.

#### TRANSCATHETER THERAPIES THORACIC AORTA.

Coordinator: **Dr. Víctor X. Mosquera Rodríguez**

From 05/06/2024 to 06/09/2024

Topic 37. Treatment strategy and indications in acute and chronic pathology of the descending thoracic aorta..

**Dr. Arturo Evangelista Masip**

Topic 38. Total endovascular treatment of the pathology of the ascending aorta..

**Dr. José Manuel Garrido - Dr. Ali Khoynezhad**

Topic 39. Total endovascular treatment of aortic arch pathology.

**Dr. Nilo Mosquera Arochena**

Topic 40. Endovascular approach to chronic pathology of the descending thoracic aorta.

**Dr. Carlos Velázquez Velázquez**

Topic 41. Endovascular approach to complicated acute aortic syndromes.

**Dr. Robin H. Heijmen**

Topic 42. Hybrid treatment of aortic arch pathology.

**Dr. Víctor X. Mosquera Rodríguez**

06

## Schedule

### MODULE 8.

#### TRANSCATHETER THERAPIES ABDOMINAL AND PERIPHERAL AORTA

Coordinator: **Dra. Rosario Conejero Gómez**

From 06/10/2024 to 06/30/2024

Topic 43. Endovascular treatment of the complex thoraco-abdominal aorta FEVAR, BEVAR and CHEVAR.

**Dr. Jorge Fernández Noya**

Topic 44. Prevention and treatment of complications in the endovascular treatment of the thoracic and thoraco-abdominal aorta.

**Dr. Víctor X. Mosquera Rodríguez**

Topic 45. Indications for treatment of pathology in the abdominal aorta: hybrid and endovascular approach.

**Dra. Rosario Conejero Gómez**

Topic 46. Endovascular approach and treatment of aneurysmal pathology in the abdominal aorta..

**Dr. Mariano de Blas Bravo**

Topic 47. Endovascular approach and treatment in peripheral arterial disease in the aortoiliac sector.

**Dr. Antonella Craven-Bartle**

Topic 48. Endovascular approach and treatment in TSA: brain protection systems and techniques in TSA.

**Dr. Francisco Javier Martínez Gámez**

Topic 49. Remedy techniques for complications of endovascular procedures.

**Dr. Jose Joaquin Muñoz Ruiz-Canela**

# 07

## Face-to-face sessions.

### **SESSION 1: VALVE AREA. MODULES 1-2-3-4-5-6. (March 7 and 8, 2024)**

1. Transcatheter procedure planning workshops with the Osirix and 3 mensio programs.
2. Basic workshops: guides, catheters, balloons, introducers, percutaneous closures and transcatheter tools.
3. Basic techniques workshops: Arterial and venous puncture, endovascular navigation, percutaneous closures, Amplatzer implant, OI and step-by-step closure of leaks.
4. Computer and virtual reality use workshop: how to transform and send DICOM files and image processing.
5. TAVI prosthesis workshops: by laboratory or by valve.
  - a) Deployment simulators.
  - b) Valve assembly sessions.
6. Clinical sessions with recorded cases

# 07

## Face-to-face sessions.

### SESSION 2: VASCULAR AREA. MODULES 1-2-3-7-8. (May 23 and 24, 2024)

1. Planning of transcatheter aortic procedures with the Osirix, 3 mensio and endosize programs. In-person workshops.
2. Basic workshops: guides, catheters, balloons, introducers, percutaneous closures and transcatheter tools
3. Basic techniques: Puncture, endovascular navigation, percutaneous closures, endoprosthesis implantation in the aorta using simulators.
4. TEVAR-EVAR-FEVAR-REVA prosthesis workshops
  - a) Endoprosthesis deployment simulators
5. Clinical sessions with recorded cases



# 08 INFORMATION

TECHNICAL SECRETARY



**Management Consulting & Events**  
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[www.mastertranscateter.com](http://www.mastertranscateter.com)





# MASTER IN THERAPIES TRANSCATHETER

Own Title San Pablo Andalucía CEU Foundation.



Fundación  
Cirugía y Corazón



CEU  
Fundación San Pablo  
Andalucía



SECCE

From November 2, 2023 to June 30, 2024