



ROBOTIC UROLOGICAL SURGERY EDUCATIONAL
PROGRAM-Fundació Puigvert

2024-2025

Robotic Urological Surgery Educational Program in Fundació Puigvert

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Article I. Course presentation

The Robotic Urological Surgery Educational Program aims to develop an updated, systematic, active, and useful training and education (T&E) course in Robotic Surgery through a framework of collaboration between Fundació Puigvert Hospital and the Universitat Autònoma de Barcelona (UAB).

Article II. Objectives

The Robotic Urological Surgery Educational Program aims to promote surgical education, as well as to provide basic and advanced training in urological robotic surgery.

The program will be carried out through the generation of an Expert Diploma within the postgraduate courses of UAB.

The specific objectives of the course are the following:

- Know the most relevant contents and characteristics of the various robotic platforms available on the market through classes delivered by experts in robotic surgery;
- Implementing the knowledge of robotic surgery in urological procedures regarding surgical indication, patient positioning, trocar and robotic platform placement and docking, intraoperative and postoperative patient management;
- Provide a step-by-step description of the most important urological surgeries performed using robotic platforms;
- Implementation of surgical skills in different urological procedures using robotic platforms through the attendance to simulation training course and live surgeries.

Article III. Candidates

The recipients of The Robotic Urological Surgery Educational Program are postgraduate Medical Doctors specialized or at their two years of residency in Urology, who want to improve their knowledge of robotic surgery and their skills in performing different urological surgical procedures through in-person classes, simulation training courses, and attendance to urological robotic live surgeries.

Article IV. Course program and contents

The Robotic Urological Surgery Educational Program is based on 4 modules that include:

Type	Description	Hours
Module 1	History of robotic surgery	1
	Differences between robotic platforms	1
	Operating theatre setting	1
	Robotic arms functions and docking	1
	Overview of robotic instruments	1
	Robotic platforms safety protocols	1
	Technological tools available for robotic surgery	1
		Total: 7 hours
Module 2a: Pelvic surgeries	Robot-assisted radical prostatectomy (transperitoneal and extraperitoneal)	4
	Robot-assisted radical cystectomy	4
	Robot-assisted ureterectomy and ureteral reconstruction	3
	Robot-assisted simple prostatectomy	3
	Robot-assisted inguinal lymphadenectomy	3

	Robot-assisted sacrocolpopexy	2
	Robot-assisted retroperitoneal lymphadenectomy	3
	Robot-assisted fistula correction	2
	Robot-assisted kidney transplantation	4
Module 2b: Abdominal surgeries	Robot-assisted radical nephrectomy (transperitoneal and retroperitoneal)	3
	Robot-assisted partial nephrectomy (transperitoneal and retroperitoneal)	3
	Robot-assisted radical nephroureterectomy	4
	Robot-assisted pyeloplasty	3
	Robot-assisted adrenalectomy	2
		Total: 43 hours
Module 3: Simulation and training	Pelvic and abdominal trainer for robotic urological procedure simulation assisted by experts in robotic surgeries	25
Module 4: Live Robotic Surgeries	Observer in urological surgeries performed with robotic platforms at Fundació Puigvert	75

In the Robotic Urological Surgery Educational Program course each participant will attend in-person classes and simulation training delivered by experts in robotic urology surgery as well as the opportunity to be observers in live robotic urologic surgeries performed at Fundació Puigvert. The first module of the course will give the participant general insights into robotic surgery and different robotic platforms as well as their usefulness and characteristics. In the same module, the Teaching team will provide information regarding surgical indication, patient positioning, trocar placement, robotic platform placement and docking, intraoperative and postoperative patient management.

In the second module of the course, the Teaching team will focus on a wide description of different urological procedures performed using robotic platforms through a step-by-step description of each surgery.

In the third module, the participants will attend a simulation training course using Medtronic HUGO simulator and dry-lab pelvic and abdominal surgery training.

In the fourth module, the participants will attend different types of robotic urologic surgeries performed by the Teaching team at Fundació Puigvert.

Article V. Overview of the Robotic Urological Surgery Educational Program

Course description and planning				
15 ECTS				
2 ECTS Introduction to Robotic Surgery and platforms and a step-by-step description of urological surgeries	1 ECTS Simulation course on pelvic and abdominal trainer	3 ECTS Live Robotic Surgeries performed at Fundació Puigvert	3 ECTS Final exam	6 ECTS Individual study

According to European Union, every ECTS accounts for 25 hours of apprentice by the participant.

Article VI. Calendar

The course duration is 6 months.

Category	Description	Location	Calendar					
			I	II	III	IV	V	VI
Module 1	Introduction to robotic surgery in urology	Fundació Puigvert - Hospital de Sant Pau						
Module 2a-b	Robotic urological procedures: pelvic and abdominal surgeries	Mixed (online or face-to-face)						
Module 3	Training and simulation	Fundació Puigvert						
Module 4	Live-surgeries	Mixed (online or face-to-face)						
Final exam	Final thesis project							

Article VII. Final exam

Each participant to the Robotic Urological Surgery Educational Program course will be evaluated at the end through a final thesis project that will be presented at the final session.

The title of the project will be agreed by the participant with the faculty.

The topics might concern:

- Surgical outcomes
- Oncologic and functional outcomes
- Learning curve
- Innovative techniques
- Implementation of new technologies in robotics

The thesis must have the following characteristics:

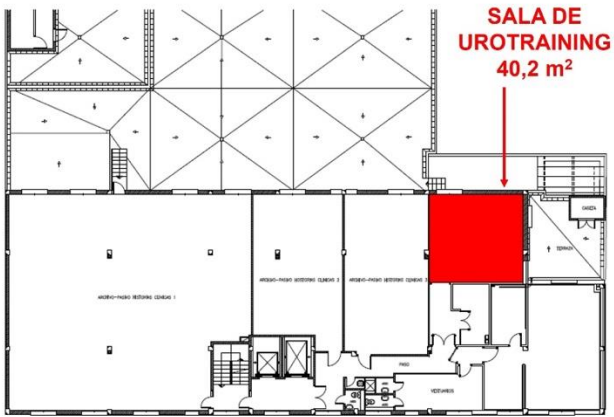
- 2000 characters
- Divided into the following sections: introduction, material & method, results, discussion and conclusion.
- English/Spanish/catalan

The thesis must be discussed at the end of the course. The result of the final examination will be binary (approved/not approved).

Article VIII. Spaces and infrastructures.

The simulation training and live-surgeries will take place at the Fundació Puigvert, which has a virtual and analog robotic simulation space. The theory classes will be held at the Hospital de Sant Pau, corresponding to the Santa Creu i Sant Pau - Fundació Puigvert (UAB) teaching unit.

Figure 1. *Urotraining*: Virtual and analogic robotic simulation



Article IX. Faculty.

Prof. Dr. Joan Palou

Doctor in Medicine and Surgery, specialist in Urology and Full Professor of Urology at the Universitat Autònoma de Barcelona. Head of the Oncological Urology Unity (2004-2017) and of the Urology Service of the Fundació Puigvert since 2018. He was Director of the European School of Urology and of the group in charge of the Guidelines on non-muscle invasive bladder cancer and upper urinary tract tumours of the European Association of Urology.

He has authored and co-authored more than 500 publications in indexed urological journals (*H-index* > 60, number of citations 19,860. Source: Scopus).

Dr. Alberto Breda

Graduate in Medicine and Surgery, and specialist in Urology in the Faculty of Medicine of the University of Padova (Italy). Research Doctorate (PhD) in Surgery and Morphological Sciences (Universitat Autònoma de Barcelona). He is currently the Head of the Oncological Urology Unit and the Renal Transplant Surgical Team at the Fundació Puigvert. Since 2022, he is Chairman of the Robotic Urology Section (ERUS) and Director of the Live Surgery Committee of the European Association of Urology. Dr. Breda is Chairman of the EAU Guidelines on Renal Transplantation. He has authored and co-authored more than 280 publications in indexed urological journals (*H-index* 33, number of citations 4,055, source: Scopus).

Dr. Andrea Gallioli

Degree in Medicine and Surgery, specialist in Urology at the Faculty of Medicine of the University of Milan (Italy) since 2020. In 2022, he obtained a Master's Degree in Urological Robotic Surgery from the University of Milan (Italy). He is currently faculty at the Oncological Urology Unit of the

Fundació Puigvert. He has authored more than 90 publications in indexed urological journals (*H-index* 13, number of citations 506, source: Scopus).

Dr. Josep Maria Gaya

Graduate in Medicine and Surgery from the Faculty of Medicine of the Universitat Autònoma de Barcelona. Specialist in Urology. Consultant at the Oncological Urology and Renal Transplant Unit of the Fundació Puigvert. Author and co-author of more than 85 publications in international and national urological journals (*H-index* 14, number of citations 755, source: Scopus.)

Dr. Angelo Territo

Degree in Medicine and Surgery at the University of Palermo (Italy). Specialist Degree in Urology at the University of Modena and Reggio Emilia (Italy) in 2016. Research Doctorate (PhD) in Clinical and Experimental Medicine at the University of Modena and Reggio Emilia (March 2020). Consultant at the Oncological Urology and Renal Transplant Unit of the Fundació Puigvert. He is the author of more than 100 scientific publications in international journals and book chapters (*H-index* 17, number of citations 848, source: Scopus).

Coordination of the program

The Robotic Urological Surgery Educational Program will be coordinated by the teaching secretary of the Fundació Puigvert.

Article X. Convenience and advantages of the creation of the Program

Transversality and dissemination of robotic surgery

Robotic surgery is assuming a preeminent role in different specialities such as Urology, General Surgery, Gynaecology, Thoracic Surgery, Transplant Surgery, Otorhinolaryngology, and Paediatric Surgery. It was launched 20 years ago, reaching an exponential diffusion worldwide. In fact, more than 10 million procedures have been performed worldwide, 1.5 million of which took place in 2021.

There are currently 100 Da Vinci robotic systems in the Iberian Peninsula, which have operated on more than 60,000 patients. In 2021, more than 12,000 procedures were carried out on the Iberian Peninsula, representing a 37% increase compared to 2020. In terms of distribution of the number of operations by speciality in 2021, Urology took first place by a wide margin with 56%, followed by General Surgery (26%), Gynaecology (10%), Thoracic Surgery (6%), and Otorhinolaryngology (6%). (www.redaccionmedica.com/secciones/tecnologia/instalado-el-sistema-robotico-da-vinci-numero-100-de-la-peninsula-iberica-3029).

Between the end of 2021 and the beginning of 2022, two new robotic platforms obtained the CE mark for commercialisation in Europe: Hugo™ RAS system (Medtronic, Ireland) and Versius (CMR Surgical, United Kingdom). This event marked the end of the robotic monopoly of the Da Vinci system by Intuitive in Europe, opening the door to competitive commercialisation, which means a greater offer for healthcare structures and a reduction of expected costs. Finally, the democratisation of robotic surgery gives new impulse to the transversality of the technology, which will expand its limits through the technological adjustments of each company, and will become even more widespread in the years to come.

Consequently, training and research in this field should be considered a fundamental challenge at university level and for the National Health System.

Why Fundació Puigvert?

The Institution

The Fundació Puigvert is a benchmark centre in Urology, Nephrology, Andrology, and Reproductive Medicine. The institution's DNA is made up of three core values: care, teaching, and research.

From a healthcare point of view, the Fundació Puigvert is a pioneering centre in robotic surgery, as the first centre in Spain to acquire the Da Vinci Robot by Intuitive in 2005. It was the first centre in Spain to perform robotic kidney transplantation (2015) and is the coordinating centre of the European robotic kidney transplant group (*ERUS-RAKT Working Group*).

In 2021, 3,295 urological procedures were performed, 139 using robotic surgery and 247 using laparoscopic surgery. In 2022, Fundació Puigvert was the first centre in Spain to perform robotic surgery with Medtronic's Hugo™ RAS System, the first in the world to perform a robotic cystectomy, and the first European centre to perform a robotic partial nephrectomy.

The Institution is attached to the Faculty of Medicine of the Universitat Autònoma de Barcelona (UAB), as part of the Hospital de la Santa Creu i de Sant Pau - Fundació Puigvert Teaching Unit (undergraduate teaching) and is a School of Specialisation (postgraduate teaching), by Ministerial Order of 26 July 1967 (BOE 30 August).

It is accredited by the Ministry of Health, Social Policy, and Equality to carry out the training programme for specialist doctors (MIR) in the specialities of urology and nephrology.

The Fundació has received the most coveted European certifications in urology.

It is the only Spanish centre approved as a *Robotic Certified Host Centre by the EAU Robotic Urology Section*.

It is recognised by the *European Board of Urology (EBU)* as a *Residency Training Programme in Urology (RTPU)* centre.

It is approved by the *European Board of Urology* in conjunction with the *European Association of Urology (EAU)* as a reference centre of the European Urology Scholarship Programmes (EUSP) in

7 subspecialties (*Prostate Cancer, Renal Cancer, Urothelial Cancer, Transplantation, Renal Calculus Disease, Female Urology & Incontinence, Paediatric Urology*). It is the only hospital in Europe to have more than four certifications in this field, and the only one in Spain to have more than one certification. This recognition entails the possibility of receiving specialised or continuing professional training sponsored by the *European Association of Urology* through competitive grants.

The Fundació Puigvert was recently accredited by the EAU as a *European Prostate Cancer Centre of Excellence*.

It is part of the *European Reference Network for Rare Urogenital Diseases and Complex Conditions* (ERN-eUROGEN).

Research represents an ongoing challenge for the Hospital. In 2021, the Urology department published 73 articles, including 12 on robotic surgery (source: Scopus). In 2022, 27 prospective clinical trials were active in the Urology Unit. Research activity also includes the oral communication of the results obtained at the most prestigious national and international congresses. For example, at the EAU 2022 congress, the doctors of the Fundació Puigvert carried out 35 presentations, 15 moderations, 4 courses of the *European School of Urology*, 7 live or semi-live surgeries, and 5 abstract oral communications, obtaining 3 awards in different areas of Urology.

Finally, the Institution's objective is to disseminate its healthcare, teaching, and scientific activities through modern media and awareness campaigns focused on men's health.

Figure 1. Key Performance Indicators (KPIs) in Communication 2021



Figure 2. Key Performance Indicators (KPIs) Press Clippings



	Gener	Febrer	Març	Abril	Maig	Juny	Juliol	Agost	Setembre	Octubre	Novembre	Desembre
Impactes	0	10	0	12	2	35	14		28	31	60	18
Premsa	0	0	0	1	0	3	3		4	2	18	2
Online	0	10	0	11	2	32	11		24	29	42	16
Audiència/dia	0	-	0	-	2.000	6.955.378	1.952.308		6.670.257	5.464.248	13.460.327	6.188.828
VPE (€)	0	?	0	?	60	128.475,00	49.349,01		55.854,59	69.540,41	105.194,75	87.601,71

* VPE: Valor Publicitari Equivalent

Urology Service

In the Urology Department there are twenty-nine doctors and a total of sixty-three beds. It has been directed by Prof. Dr. Joan Palou since 2018. It is divided into five units: Oncological Urology (Head of Unit: Dr. Alberto Breda), Reconstructive and General Urology (Head of Unit: Dr. Javier Ponce de León), Lithiasis (Head of Unit: Dr. Oriol Angerri), Paediatric Urology (Head of Unit: Dr. Ana Bujons), Functional, Female and Urodynamic Urology (Head of Unit: Dr. Carlos Errando).

Finally, there is the Renal Transplant Division, which is a cross-cutting unit headed by Dr. Alberto Breda.

The service is equipped with the most innovative surgical technologies in the urological field, including the Da Vinci X robot (Intuitive Surgical Inc., United States) and a Hugo™ RAS robot (Medtronic, Ireland.)

The department is equipped with Urotraining Simulation Programme, operated in a dedicated area with a Da Vinci robotic surgery simulator, a laparoscopic surgery simulator, two pelvic trainers and an upper urinary tract endoscopic surgery simulator. In addition to the Urotraining, there is a new robotic simulation area for the Hugo™ RAS platform (Medtronic, Ireland), which allows the user to learn all the platform's operating principles and train with the system.

[Why the Universitat Autònoma de Barcelona?](#)

The Universitat Autònoma de Barcelona (UAB) has been ranked as the first University in Spain for the second consecutive year by the QS World University Rankings. Furthermore, it is ranked 149 in the World University ranking which makes above the 90 percentile of the best Universities across all the world. It offers more than 400 postgraduate courses per year. Out of them, 66 are run out in the field of Medicine.

UAB is eager to start providing “Expert Diploma” courses, which are postgraduate courses newly introduced by the European Union, characterized by a high-degree of specialization.

The relationship between UAB and Fundació Puigvert is historical and relies on different collaborations regarding both Medicine and Surgery program and Urology and Nephrology Specialization programs.

Article XI. Economic report

The T&E Program in Robotic Surgery will deploy an annual work plan based on the agreed objectives. The Program is funded by the Fundació Puigvert, thanks to the sponsorship agreement signed with Medtronic. It has the infrastructure and resources made available by the UAB as well as the collaboration of the people registered in the Program, who will act as experts and advisors in the actions developed by the Program.

Medtronic sponsors the Fundació Puigvert for the financial support of the Program with an endowment of 63,000 euros per year, for a period of four consecutive years as stipulated in the Agreement between the Parties, which includes this report. On the other hand, the Chair may establish collaboration agreements with other institutions, to increase its work potential and ensure its viability.

Article XII. Budget distribution

Category	Description	In charge	Unit cost	Unit	Total cost
Simulation and training material	Pelvic and abdominal trainer for robotic urological procedure simulation	Fundació Puigvert	Pelvic trainer: 654,95€	5	9444.75€
			Pelvic trainer disposable: 578,95€	5	
			Kidney trainer: 654,95€	5	
Simulation and training teaching	Pelvic and abdominal trainer for robotic urological procedure simulation	Gaya/Territo/Gallioli	200€/h	25h	5000€
Teaching	In-person classes and educational material preparation	Breda/Palou	315€/h	50h	15750€
Live surgery	Robot-assisted urological surgeries	Breda/Palou	315€/h	45h	14175€
		Gaya/Territo/Gallioli	200€/h	30h	6000€
Other	Educational material, University classroom rent, Delivery of robotic platforms	Fundació Puigvert	/	/	12.600€
					62969,75€

The costs of the pelvic and kidney trainer models have been estimated using Urotrainer models (<https://urotrainer.myshopify.com/>).