

# Doctoral Studies in the Barcelona School of Architecture

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Comic strip of the act of reading a PhD thesis in Barcelona. Illustrated by Pedro Strukelj, doctorate student of ETSAB.

## A Brief history of the doctorate in the School of Architecture of Barcelona (ETSAB)

A few brief precedents of the evolution of the doctorate in Barcelona will help to understand the State of the current situation. The Architectural School in Barcelona is nearly 140 years old; however, the doctoral studies –understood as a field of study within itself for research in architecture– have existed for little more than thirty years<sup>1</sup>.

While Oriol Bohigas was director of the School between 1977 and 1980, Helio Piñón, deputy director at the time, was in charge of establishing and organizing a few specific doctorate courses for the first time, differentiated from fields related to engineering, arts or social sciences. Piñón explained those moments highlighting the previous years, between 1971 and 1977, as



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1. DOCTORAL PROGRAMMES AND RELATED OFFICIAL DEGREES IN ARCHITECTURE, URBANISM AND CONSTRUCTION \_ETSAB\_UPC-BARCELONA TECH\_2013 DECEMBER

DOCTORAL PROGRAMMES	OFFICIAL DEGREES AND DEPARTMENTS RELATED	INTENSIFICATION LINES	RESEARCH GROUPS INVOLVED
ARCHITECTURE, ENERGY AND ENVIRONMENT	Master in Architecture, Energy and Environment CA 17/EEU/FA/PE		AIEM: Architecture, Energy and Environment
VISUAL COMMUNICATION IN ARCHITECTURE AND DESIGN			ARSM: Architectural Representation and Modelling
URBAN AND ARCHITECTONIC MANAGEMENT AND VALUATIONS	Master in Urban Management and Valuation CA 1		CPSV: Centre of Land Policy and Valuations
ARCHITECTURAL DESIGN	Master in Theory and Practice of Architectural Design PA	1. Modern Form 2. Environmental and Historical Design approaches to Architecture 3. Project and Analysis 4. Architecture in mass society	FORM: Modern Form GIRAS: Architecture: Project, Territory and Society HABITAR: Inhabiting CERCLE: Architecture Circle PAB: Architectural Pretexts: Barcelona ARCHT: Present architecture, to construct today, to learn today
ARCHITECTURE TECHNOLOGY, CONSTRUCTION AND URBANISM	Master in Architectural Technology CA 1	1. Construction 2. Facilities 3. Restoration 4. Structures	DITEC: Diagnosis and intervention techniques in the restoration and rehabilitation of buildings GAT: Group of Architecture and Technology GICITED: Interdisciplinary Group on Building Science and Technology LITA: Architecture Innovation and Technology Laboratory ALEA: Art, Aesthetics and Anthropology of Space HMA: History of Art and Architecture PUPP: Urban Perspectives: Processes and Projects GRU: Urbanism Research Group LUB: Urbanism Laboratory PIPPP: Urban Perspectives: Processes and Projects
THEORY AND HISTORY OF ARCHITECTURE	Master in Theory and History of Architecture CA		
URBANISM	Master in Urbanism UOT		
DEPARTMENT CODES:			
CA 1: Architectural Technology 1; EGA 1: Department of Architectural Representation and Visual Analysis 1; PA: Architectural Design; UOT: Urbanism and Regional Planning; EA: Structural Architecture; CA: History and Theory of Architecture; EEL: Electronics Engineering; FA: Applied Physics; PE: Engineering Projects.			

Chart 1

Doctoral programmes and related official degrees in Architecture, Urbanism and Construction. December 2013.

decisive for the beginning of the educational progress in Barcelona by incorporating Rafael Moneo as Chair Professor of Architectural Design. He introduced a way of approaching architecture “as a cultural historical fact, beyond professional empiricism (...) in which professional expertise did not impede posing education as a problem of understanding in which reflection plays a decisive role”<sup>2</sup>. Since then doctoral studies have suffered, at least two major changes, due to legislative reforms that have affected the entire Spanish University sector.

In the 1986-87 course the administrative structure of the Universities was modified and the organization in departments was adopted. This led to the division of the doctoral programme into the new departmental units and even within these departments to distinguish different lines of research called *Intensifications*.

Ten years later, during the 2006-2007 academic year, a new reform was initiated in response to the advances in the establishment of the European Higher (Architectural) Education Area agreed in Bologna. As a consequence of this, the teaching of the doctorate was substituted by the follow-up of postgraduate programmes with a master level which supposed an authentic re-foundation of the postgraduate. The creation and implementation of new Master programmes meant that by passing with a level of excellence enabled one for the admission to the doctorate<sup>3</sup>. To summarize, the evolution in the organization of the doctoral studies has depended on laws impelled by the governments of Spain and Europe rather than the evolution of architecture itself.

The current situation, derived from that mentioned, implies that the field of Architecture, Urbanism and Construction –this is how the Polytechnic University of Catalonia defines it– is served by seven doctoral programmes that to this day are: *Architecture, Energy and Environment; Visual Communication in Architecture and Design; Urban and Architectonic Management and Valuation; Architectural Design; Architecture Technology, Construction and Urbanism; Theory and History of Architecture; and Urbanism* (See chart 1). The academic management of these programmes depends on the Polytechnic University of Catalonia (UPC) and their respective departments, not on the School –although this situation might be inverted in short<sup>4</sup>. All the postgraduate programmes, masters and doctorates, are strongly internationalized: due both to the origin of the students– globally considered that the UPC is made up of 52% Spanish students and 48% overseas, in the field of architecture the percentage of overseas students is even greater– as for the collaborations with other countries.

In the near future, during 2014, the ETSAB will have the opportunity to resolve its place in the UPC –which is highly questioned because Engineering and Sciences impose scientific criteria of evaluation on the research activity which prejudices that of the architects. This is a status reform that will only affect the School of Architecture and consequently may govern specific disciplinary criteria.

The overall progress of society and of all sciences leads to an increase and improvement in the control of the factors of habitability, energy expenditure and protection of the building. This implies more and more the competence of specialized technical knowledge. The objectives of a doctorate programme of technology are very clear. A society's expectations with respect to construction, what politicians, citizens

DOCTORAL PROGRAMMES	*Enrolled students	Defended thesis	RELATED OFFICIAL DEGREES	*Enrolled students
ARCHITECTURE, ENERGY AND ENVIRONMENT	49	6	Master in Architecture, Energy and Environment	18
VISUAL COMMUNICATION IN ARCHITECTURE AND DESIGN	61	9		
URBAN AND ARCHITECTONIC MANAGEMENT AND VALUATIONS	61	3	Master in Urban Management and Valuation	36
ARCHITECTURAL DESIGN	265	13	Master in Theory and Practice of Architectural Design	60
ARCHITECTURE TECHNOLOGY, CONSTRUCTION AND URBANISM	105	15	Master in Architectural Technology	131
THEORY AND HISTORY OF ARCHITECTURE	97	8	Master in Theory and History of Architecture	30
URBANISM	64	8	Master in Urbanism	77
			Master in Landscaping	77
	702	62		429
Total number of students enrolled: 702 (doctorate) + 429 (master) = 1131 students				
*Data obtained from the Postgraduate Office, ETSAB. Academic course 2011-12				

Chart 2

Number of students enrolled in postgraduate programmes. Academic course: 2011-12.

and enterprises want has to be found in what finances the programmes for research project calls, national or international<sup>5</sup>.

It presents the opportunity to reflect on whether the segmentation of the doctoral programmes in partial technical views is in favour or against the understanding of the architectural fact. Although recognizing to begin with the difficulty of establishing a stable and systematic understanding of the architectural project, one would have to seize the moment to promote a coordinated functioning and favour a greater awareness of the unity of the project. A collaborative commitment capable of integrating science and disciplines in an articulating and totalizing practice becomes increasingly more essential.

Given this state of affairs, and from the existing departments' point of view, that of Architectural Design (DPA) would be the one that would have the major responsibility in placing to the fore the work of architecture and its project, as the centre and axis of education and training activities. Architectural design should be the action framework of any subject in which the study of architecture is integrated. In contrast, in reality one observes the progressive loss of its importance in front of the scientific specializations when it should be gaining it as the only ordering activity that transcends the mere accumulation of technical skills and humanistic knowledge.

## The doctorate in the Department of Architectural Design (DPA)

The official Master, "Theory and Practice of architectural design" that has been taught since the 2006-07 course, is the foundation of the training activities of the doctoral programme and has the consideration of a master in research. Its main objective is to deeply delve into those theoretical and methodological questions which allow the development of a thoughtful and rigorous practice of the architectural design project and at the same time promote the training of research personnel involved in the project that could be incorporated into the university teaching structure in the future.

The Department of Architectural Design (DPA) is integrated by 140 professors of which 32 are doctors who work in postgraduate training activities<sup>6</sup>. During the academic year 2011-2012 sixty-two doctoral theses were read in the field of Architecture, Urbanism and Construction of which thirteen belonged to the DPA programme<sup>7</sup> (See chart 2).

The educational training given in the Master is organized on the basis of four intensification lines: *L1 - Modern Form; L2 - Environment and Historical Design; L3 - Project and Analysis; L4 - Architecture in mass society*<sup>8</sup>. They all state that to advance in the understanding of the project's tools it is necessary to acknowledge architecture in depth by carefully studying its historical and contemporary examples. This will be the main activity that the students will develop for the master: analyse architecture to understand the sense of its form.

The Master's Course is divided into two parts: In the first part the student courses all of the intensifications in a transversal manner and in the second the student opts for one in particular in order to follow a research seminar in which methods and guidelines are provided for a rigorous study in order to elaborate the thesis. His/her contribution to knowledge should be the basis for an article in an indexed journal, be the germ of a doctoral thesis or provide teaching materials for an architectural design workshop. Once surpassed the master with high marks s/he can request access to the doctorate. The development of thesis work progresses through tutoring which is either individualized or in group, with the director.

In order to support the dissemination of their research a few intensification lines publish their own collections, but there are also several institutional supports: the digital deposit of doctoral theses and the deposit of theses, direct access portals in UPC Commons<sup>9</sup>.

Carlos Martí Arís has, among his many merits, that of having encouraged, coordinated and directed two initiatives since 1997 which have had great impact on the production of knowledge and the dissemination of the doctorate: the academic journal DPA gathers reflection on architecture and includes reviews of the Department's most outstanding thesis and the doctoral thesis contest of the "Caja de Arquitectos" Foundation (FCA)<sup>10</sup>. FCA is an institution with headquarters in Barcelona, which promotes amongst other activities a biannual contest of the doctoral thesis of Spanish Universities - regardless of the nationality of the doctor- of which eight editions have taken place. The rewarded Theses are published in a collection called ARQUITESIS which has become a reference in Iberoamerica<sup>11</sup>.

## A coordinated degree, master and doctorate experience

Architectural Design as an educational area in ETSAB constitutes a core subject and is present in all graduate and postgraduate courses; however, a better relationship between the two academic levels would be desirable. Perhaps an example would clarify a way in which one could take pedagogical advantage of architecture and at the same time advance in its understanding. It is not a generalized case, but a possible milestone to aim for. The following experience took place between 2006 and 2012 and kept on moving forward without premeditation to form a perfect circle. The work on a

same architectural reference linked all levels of architectural training: degree, master and doctorate. The process was sparked off by the teachings of Helio Piñón - as coordinator of the *Architectural Design III- IV* course and as head of L1- Form- and backed up by professors like him<sup>12</sup>.

The home of the American architect Gordon Bunshaft in Long Island (1963) served as a reference to pose a project's exercise to students in the second year of the degree; this later became the subject of a master's thesis and finally a doctoral thesis. This is an exemplary project that allows appreciating the formal and architectural possibilities of the use of prefabricated elements, in this case, ribbed floor slabs of a catalogue of reinforced concrete.

During the 2005-2006 course, the second year students were provided with a dossier containing the floor plan, photographs and basic bibliographical references of this example. The choice reinforced the lessons on prefabrication which were being given at the same time in the construction course. The objective was to initiate students on the rising technological issues within our context but mainly to teach how to look for the aesthetic basis in either of the constructive aspects of the building. Helio Piñón distinguished between *building material* and *architectural design material* - and it is the latter that interested us-. As a form of an alibi for the exercise a reconversion of the architect's house into a foundation dedicated to the study of his work was proposed. Starting from here the students were guided in the appreciation of architecture. They were obliged to draw the original project in order to proceed with their intervention in a very similar graphic restitution and the benefits of this task are uncountable.

In the research Seminar of the Master's Degree in 2007-08, this house project was put forward as a subject for study. This time, the aim was to explore the house's formal system: studying the changes of use and scale of the constructive system, the spatial and distributional repercussions, and relating it to other buildings that used the same pre-cast piece, the ribbed Pi slab. The author of the thesis conducted an exhaustive bibliographical search by collecting data from publications of the period and carrying out a meticulous graphical restitution of the comparison of two buildings which served as the basis for his/her doctoral proposal<sup>13</sup>.

In November 2012, a thesis titled *Form and Tectonics: Structure and Prefabrication in the work of Gordon Bunshaft* was defended. The study had extended to the entire architectural production with precast concrete elements of that architect to explore its spatial and aesthetic sense compared to that of metallic systems, as well as the meaning and convenience of the choice of the pieces in relation to space and the building. The author extended the bibliographical information of the dissertation with the consultation of the architect's original files in New York, obtaining material from executive projects and visits to the original buildings. The author produced a comprehensive graphic edition comparing building systems and showing their architectural impact<sup>14</sup>.

The material collected and edited in these works is intensely used as teaching material in the degree workshops. At the moment, the public works sector in Spain promotes the intensive use of industrialized and prefabricated systems and funds research.

Ultimately, this is to promote a type of access to understanding in which reflection and conception become facets of the same activity in order to comprehend the judgment criteria that favours a responsible creative practice.

### **The programme's new challenges: changes in society and in the way of producing and thinking about architecture**

The academic structures "of research" in architecture are very recent compared to both the school itself and the tradition of the discipline and, of course, to science research. The building technology sector adapts very well to the scientific model. But there is evidence of a clear mismatch between the research procedures carried out by the engineering branches and the manner in which the study of architecture is approached, both as a development problem and as an architectural design form. The low esteem that the scientific production's valuation tables show for books by architects and the little sympathy that the indexed publications or the peer review have among architects are also clear signs of divergence.

In the 2011-2012 course 702 doctorate candidates enrolled in all the doctoral programmes in the field of *Architecture, Urbanism and Construction* of the UPC and 62 theses were read. The data shows a clear inflation of architects enrolled in the tutorial of thesis, who we can assume both the willingness to learn as the lack of encouragement, incentive or competence to finish. Many architects pay the tutorials annually but they do not progress or complete their doctoral theses. Besides thinking about academic or economic sanctions, we need to rethink what would be necessary to make those enrolled, new and veteran, feel the urge to finish what they started off. Possibly the selection of candidates and themes will have to improve, pre-selected by the research groups, so that the study supposes an inescapable challenge, vital, of life or death.

In a society in which continuous updating has become a necessity: studies never end. The demand for postgraduate specialization programmes increases according to the job market, but in relation to this lifelong learning what role does the doctorate fulfil. Traditionally the doctorate was an accreditation in order to dedicate oneself to teaching but rather a hassle, an incompatibility, to work in the profession. The offer of professionalizing Masters is inserted at an intermediate level, but it would be positive both for the society as for the discipline to take up the indications of Rafael Moneo regarding unifying professional competence and reflection.

And beyond that, regarding the possibility of learning and teaching Architecture there are divergent opinions. Some say that everything that can be taught is not worth being learned or that everything that has an explanation is not important. Regardless of whether a professor can effectively teach architectural design or if it is the student who learns by himself/herself, it is unquestionable that the desire to understand can teach more than what the professor knows himself/herself. Therefore, even when being on the educational side, the professor should not abandon his/her vocation to study. This undeniable link between teaching classes and research in university classrooms should serve to keep the degree and postgraduate programmes together.

er. In a delightful essay titled Musical Poetics, Igor Stravinski, the musical composer, states that the study of the art form is a creative act<sup>15</sup>.

### Some additional data: What do the charts explain?

#### The doctorate in architecture compared to PhD in engineering at the UPC

In both there are more men (60%) than women (40%). During the academic year 2011-12, 354 theses were read in the UPC of which 62 belonged to the field of architecture (18%). In engineering there are more Spaniards (56%) than foreigners (44%), however, in architecture there are more foreign students (52%) than Spanish ones (48%). The engineers finished their doctoral studies aged between 25 and 35 years old, the architects between 35 and 44 years old.

#### Doctorate and Masters in architecture

In the academic year 2011-12, there were 1131 students enrolled in the postgraduate level (702 in the doctoral level and 429 in the master level).

#### Master in Architecture

The Master programmes have even more international enrolment than the doctorate: 17% European and 83% from the rest of the world (75% students from Latin America, 6% Asia, 1% USA/Canada, 1% Africa). The Master with the largest number of entries is Architectural Technology -131 students (30%). Last year the enrolment declined in all masters.

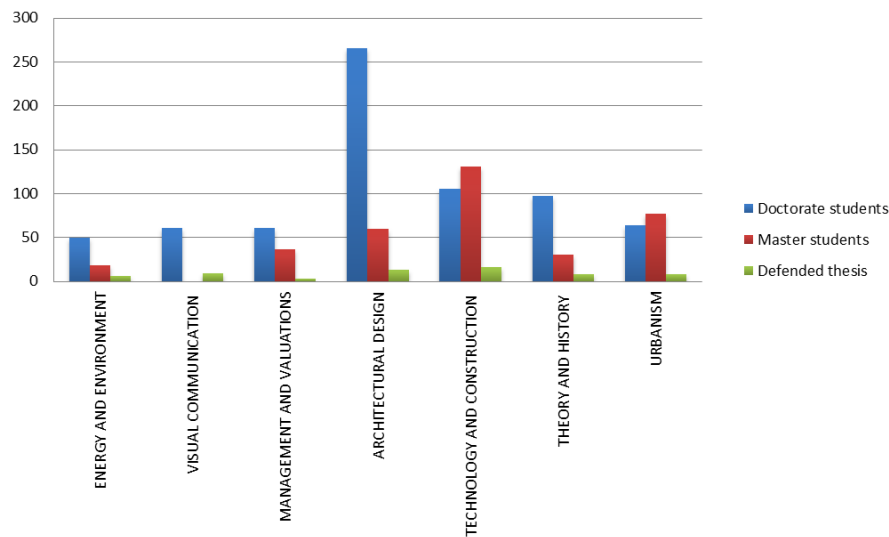


Chart 3  
Number of students enrolled in doctorate and master programmes. Academic course: 2011-12.

#### PhD in Architecture

The doctoral programme with the largest number of entries is Architectural Design -265 students (37%). The evolution of the ratio between foreign and Spanish students tends to equal: 54% versus 46%. Poor performance of the index between students enrolled and the number of read thesis. The best ratio corresponds to the Urban Planning programme.

#### Notes

- The ETSAB was founded in 1875. In 1973 the School became integrated with that of the School of Industrial Engineering to form the nucleus of what is now the Polytechnic University of Catalonia. Look at: <http://www.etsab.upc.edu>
- "In this period there was a general regeneration that addressed teaching, administration and facilities at the same time, the entire plan of studies was revised and a third cycle was organized – a coherent doctorate". Helio Piñón: "Two recent references" and "A generalist career"

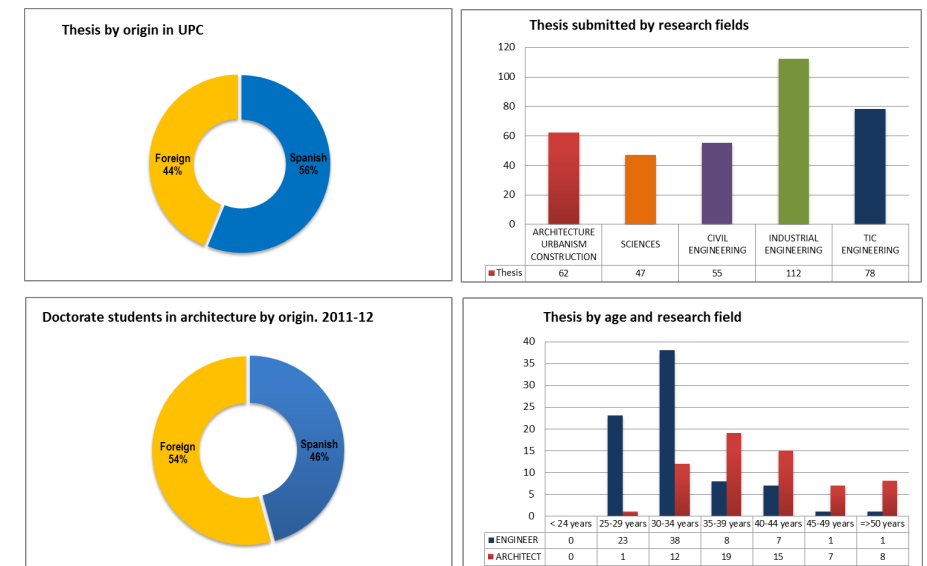


CHART 3  
Doctorate in Architecture and its relationship with the UPC. Academic course: 2011-12  
a. Thesis by origin in the UPC. Academic course: 2011-12  
b. Thesis by origin and in Architecture. Academic course: 2011-12  
c. Thesis submitted by research fields. Academic course: 2011-12  
d. Thesis by age and research fields. Academic course 2011-12

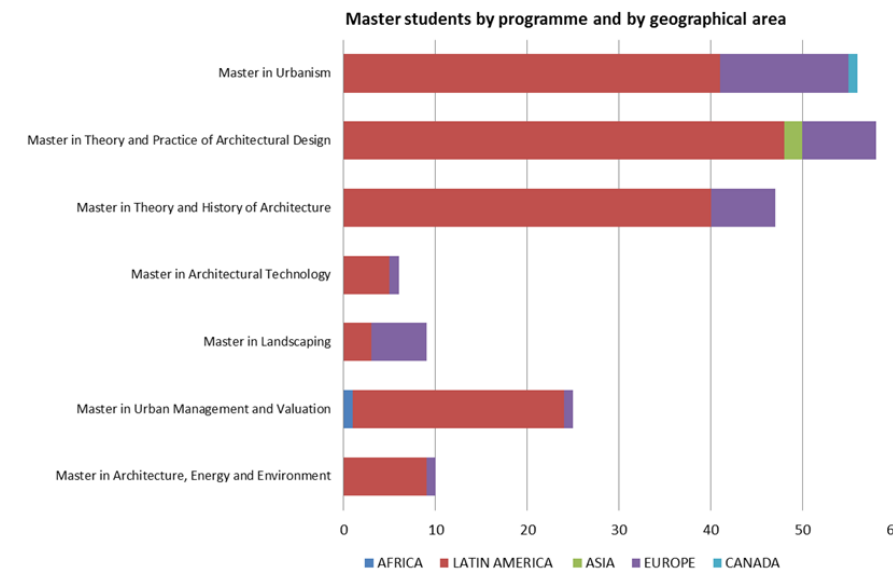
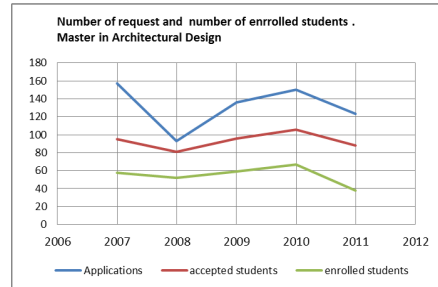
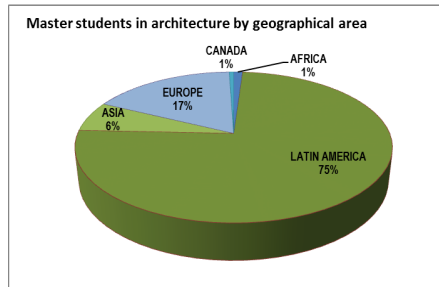
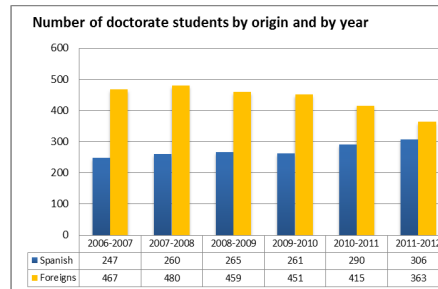
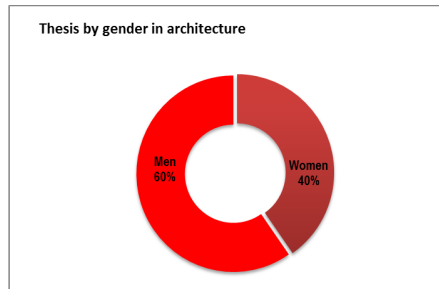


Chart 4. Doctorate and Master in Architecture

- Doctorate students by genre.
- Evolution of doctoral students by origin
- Master students by geographical area.
- Evolution of the number of requests and the number of enrolled students in master programmes in Architecture. Academic courses: 2007-11
- Master students by programme and by geographical area. Academic course 2011-12

in the *Basic Course of Architectural Design*. Collection: Subjects of modern architecture, No.2. Barcelona: UPC Editions, 1998, p.143-147

- Look at the organization chart of the Master's programmes connected to the doctoral programme in the field of *Architecture, Urbanism and Construction* in the attached table. The doctoral programme in Visual Communication is the only one that does not have a directly linked master. In order to consult the doctoral programmes look at: <http://doctorat.upc.edu>. In order to consult the master programmes look at: [http://mastersuniversitaris.upc.edu/projectes\\_arq](http://mastersuniversitaris.upc.edu/projectes_arq)
- In the "Report of the Doctoral School of the Polytechnic University of Catalonia-Barcelona Tech (UPC). 2011-2012 Academic year". The administrative procedures for admission, reading, defense, etc. can also be consulted on the following website: <http://doctorat.upc.edu>
- At a European level one would have to consult the recent document proposed Horizon 2020: The Framework Programme for Research and Innovation. Look at in: <http://ec.europa.eu/programmes/horizon2020/en/h2020-sections>
- Look at information relating to the department at: <http://www.pa.upc.edu/presentacio>
- Data obtained from the "Report of the Doctoral School of the Polytechnic University of Catalonia -Barcelona Tech (UPC). 2011-2012 Course". Ibidem. 4
- The research groups linked to the intensifications are: FORM, GIRAS, HABITAR, CERCLE, PAB
- Deposit of Master Thesis: <http://upcommons.upc.edu/pfc/handle/2099.1/4239>. Deposit of doctoral Thesis: <http://tdx.cat/>
- Look at information of the journal at: <http://revista.dpa.upc.edu/>
- On the Internet site of the FCA one can download copies of the ARQUITESIS collection sold out in its printed version. See them at: <http://fundacion.arquia.es/es/fundacion>
- The research line "Form" has formed 49 doctors in three decades. It maintains intense research activity on architecture in Latin America in collaboration with research groups in Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, Portugal, Uruguay and Venezuela
- Master Thesis published in UPC Commons: <http://hdl.handle.net/2099.1/8354>
- Thesis available digitally in <http://tdx.cat/handle/10803/113783>
- The text originally published in French corresponds to the Charles Eliot Norton Lectures entitled "Poétique musical sous forme de six leçons", taught at the Harvard University in 1939-1940

