

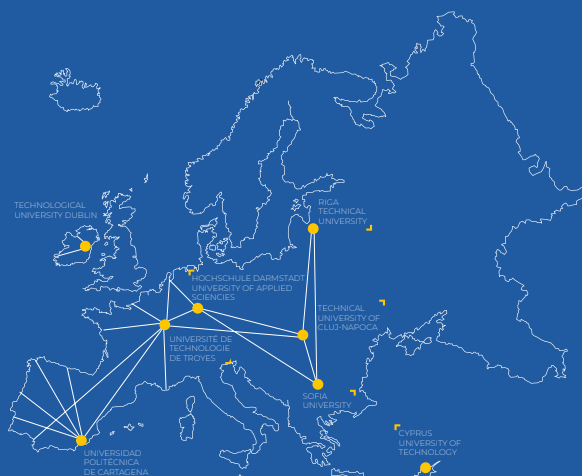
GUIDE OF DOCTORAL STUDIES AT

UNIVERSIDAD POLITÉCNICA

UPCT

CARTAGENA

Where do you see yourself
tomorrow?



Universidad
Politécnica
de Cartagena



EUROPEAN
UNIVERSITY OF
TECHNOLOGY

"Think human first"

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WHAT ARE DOCTORAL STUDIES?

Doctoral degrees are advanced graduate or professional degrees that demonstrate mastery in a particular subject area.

It is the highest degree awarded by a university. To obtain the title of doctor, it is necessary to demonstrate the ability to carry out original and autonomous research.

To carry out doctoral studies at the UPCT, it is necessary to apply for admission to one of the programmes offered by the International Doctoral School (EINDOC), within the periods established for each academic year. Once admitted, it is necessary to enroll. Enrolment will need to be renewed at the beginning of each academic year until the presentation and submission of the doctoral thesis.



WHO CAN ACCESS THE DOCTORAL STUDIES?

In general, students who wish to study an official doctorate programme must hold an official Bachelor's Degree or equivalent qualifications, and a university Master's Degree, or equivalent, provided that they have passed a total of at least 300 ECTS credits in these two degree courses.

Students who provide proof of the following qualifications may also study the programme (see complete list in Article 6 of the Royal Decree 99/2011):

- Hold a degree (or provisional degree certification) from a country in the European Higher Education Area that gives students eligibility in the country in question to study Master's Degree courses, provided that they have passed a minimum total of 300 ECTS credits in all official university courses, of which at least 60 credits have been at Master's level.



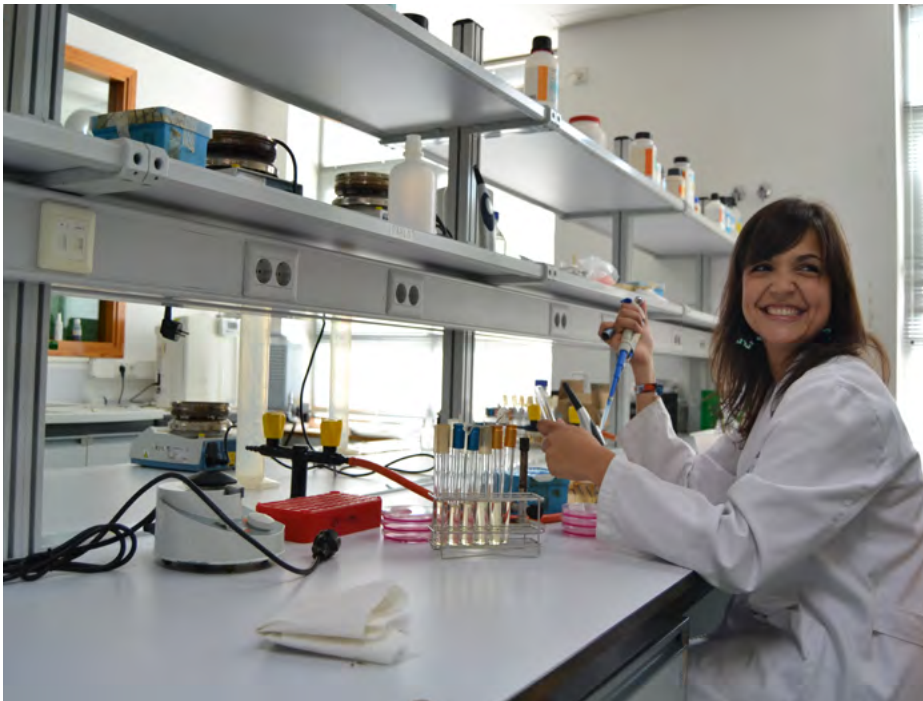
- Hold a degree obtained under foreign educational systems, without the need for validation if the university has verified that the degree certifies a level of studies equivalent to that of an official Spanish University Master's Degree and that it provides eligibility for students to take Doctorate studies in the country that issued the diploma.
- Hold a Spanish PhD degree obtained under previous university regulations.
- Hold an official university Bachelor's Degree in Architecture or Engineering, or a diploma that is certified as corresponding to level 3 of the Master's Degree of the Spanish Higher Education Qualifications Framework (MECES), corresponding to the Second Cycle of the Qualifications Frameworks in the European Higher Education Area (QF-EHEA).



The EINDOC is a multidisciplinary school offering doctoral programs in different fields: Engineering and Architecture, Sciences and Social Sciences. The UPCT has 9 doctoral programmes verified with the Royal Decree of Doctorate 99/2011, which cover practically all the previous scientific fields: industrial technologies, telecommunications and information technologies, agricultural engineering, civil engineering, renewable energies and energy efficiency, architecture, economy and business administration, sciences. Each programme is divided into different lines of research and is managed by an Academic Committee (see the details at <https://upct.es/estudios/doctorado>).

HOW LONG DOES THE STUDIES TAKE?

The duration of the PhD studies will be a maximum of 3 years full-time or 5 years part-time; if before the end of these periods an application for the submission of the thesis has not been made to the Academic Committee of the programme, it may, at the request of the doctoral candidate, authorise an extension in accordance with the Regulations to continue in the programme.



WHO IS IN CHARGE OF SUPERVISING THE THESIS?



Ph.D. tutors and advisors are advanced members of the UPCT or other research institutions who serve as mentors of your research work and keep track of your progress. They also facilitate your communication with the Academic Committee of the programme. Tutors are appointed by the Committee upon your admission. Tutors must hold a Ph.D. degree and have ties with the program, as well as a proven track record in research of at least six years.

The Committee will also appoint a thesis advisor within three months from initial enrolment on the programme. Thesis advisors must hold a Ph.D. degree and have a proven track record in research of at least six years (or equivalent qualifications), as well as specific research experience in the field of your thesis. Advisors' may be based at any university, center or institute in Spain or abroad. A professor may be appointed as both tutor and advisor of a Ph.D. student. The Academic Committee may change the designation of tutor/advisor throughout your doctoral period for justified reasons.

WHAT ACTIVITIES ARE CARRIED OUT ANNUALLY?

The PhD student must prepare a Research Plan during the first academic year of the stay on the programme, which, together with the training activities that he/she carries out, will be included in the activities and research plan register system. Both will be regularly reviewed by the tutor and thesis advisor and assessed annually by the academic committee responsible for the PhD programme. A number of activities defined in the doctoral programme must be carried out annually, some of them are common to all programmes (such as ethics, data science, bibliographic references, entrepreneurship, writing scientific articles, among others), and others are specific to each programme (attendance to congresses or seminars, publications in journals, etc.).



WHAT IS A DOCTORATE WITH THE MENTION “DOCTORADO INTERNACIONAL”?

The award of the “Doctorado Internacional” mention is given by the UPCT when the PdD student meet these requirements: (1) the student have completed a minimum stay of three months at an institution of higher education or a renowned research centre, studying or conducting research works; (2) part of the thesis must have been written and presented in any of the standard languages for scientific communication in their field of knowledge, different from the official languages in Spain; (3) The thesis must have been informed by a minimum of two experts belonging to a non-Spanish institution of higher education or a research institute; and (4) at least one expert Doctor belonging to a non-Spanish institution of higher education or research centre and different from the responsible for the above mentioned stay in must have been part of the Thesis Assessment Court.



WHAT IS A DOCTORATE WITH THE MENTION “DOCTORADO INDUSTRIAL”?

The doctoral degree certificate may include the “Doctorado Industrial” mention. To be awarded with this mention you must: (1) have an employment or commercial contract with a company in the public or private sector or with a public administration; and (2) have participated in an industrial research or experimental development project carried out at the company or public administration where you have provided services and which must not be the University. The industrial research or experimental development project in which the doctoral candidate must be directly related to your thesis. This relationship must be certified by means of a report approved by the UPCT before ending the first academic year.

You will have a thesis tutor assigned by the UPCT and a supervisor assigned by the company or public administration, who may be the thesis supervisor, during your participation in the industrial research or experimental development project.

WHAT IS A DOCTORATE IN COTUTELLE?



Cotutelle is an option for developing a doctoral thesis whereby the candidate simultaneously meets the requirements of two institutions: UPCT and a foreign university. Only one thesis is written but it allows the doctoral candidate to receive a degree from both

institutions under an agreement between the two institutions that reflects the mutual understanding between the two and stipulates the conditions under which the work will be carried out.

During the training period required for obtaining the Doctorate, the student has to complete a minimum six-month stay in the institution with which the joint supervision agreement is established, conducting research, either in a single period or in several. Stays and activities will be reflected in the joint supervision agreement. Dissertations written under cotutelle agreements are co-advised. The advisors (one from each institution) must generally be professors at the signatory universities.

At the UPCT, students who write their theses under cotutelle agreements must meet the same requirements as any other doctoral candidate in all phases of their work.

REQUIREMENTS FOR DELIVER AND DEFENCE THE THESIS

The criteria is different depending on each research field. As a general basis, engineering-related doctoral thesis needs to be supported by at least one article published in a Q1 to Q3 ISI-JCR SCI ranked journal. For thesis in the field of Social Science the ISI-JCR SSCI and Scopus are also considered. A Doctoral Thesis can be submitted in the UPCT as a compendium when more than three high quality articles are supporting the work. The UPCT regulations for doctoral studies provides all the detail



WHAT LEVEL OF CONFIDENTIALITY CAN BE ASSOCIATED TO A THESIS?

Under exceptional circumstances, for example, where there are non-disclosure agreements with companies or there is a possibility of patents being generated covering the thesis content, the author and the supervisor can request for the PhD thesis confidentiality to the EINDOC. When depositing the thesis, the student should send a complete version of the thesis together with another version without the confidential parts.



If confidentiality is approved, both the pre-defence panel of experts and the defence board members shall sign a non-disclosure agreement related to the contents of the thesis. After finishing the confidentiality period established by the EINDOC, the thesis will be published in the University's open repository. Apart from this, there is a softer version of protection for six, twelve or eighteen months after defence if needed to protect the research results.

THE THESIS COMMITTEES AND THE EVALUATION OF THE THESIS WORK

The thesis committees of the UPCT usually consist of three members. In some cases, such as in thesis with co-tutelle, the number of members may vary to fit the requirements of the different universities.

If there are three members, only one can be from the UPCT. The other two members have to be from another university. In addition, only two of them can be from the same university.



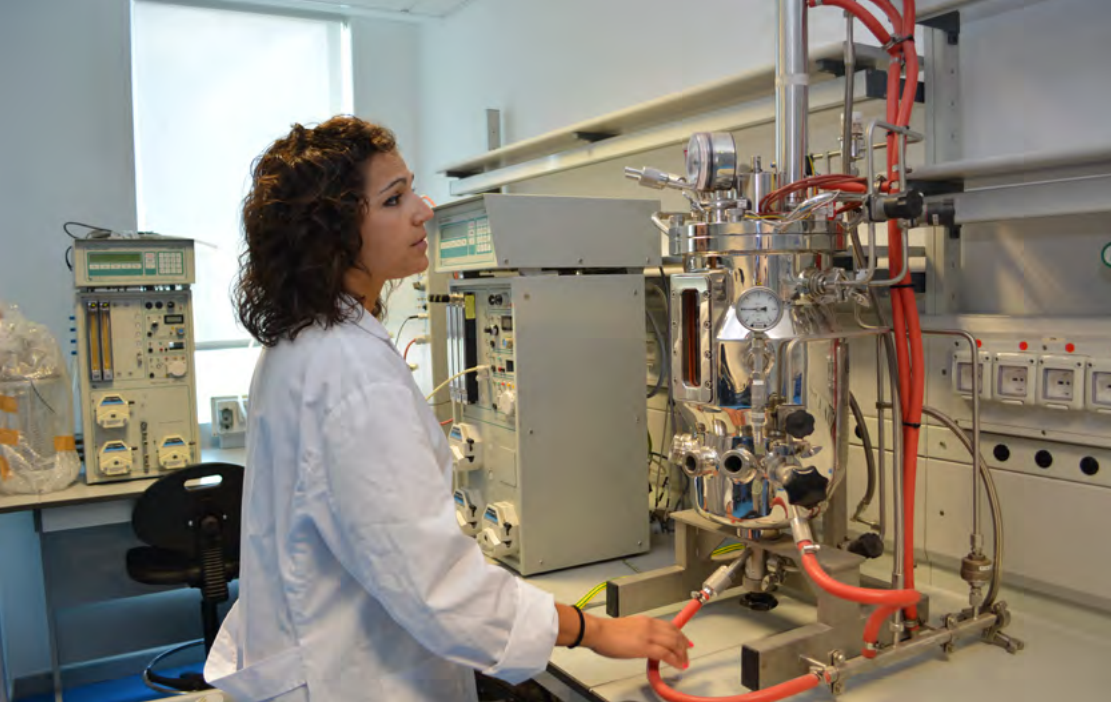
Not every doctor can be a member of the thesis committee. It consists of three full members (one president, one secretary and one chair) and three substitutes, all with a doctoral degree and with proven research experience according to the regulation of doctoral studies of the UPCT. Doctors are invited to participate in the public event by asking questions

at the moment and in the way indicated by the president of the thesis committee. Supervisors and tutors are usually specially invited to participate if they consider saying something in defence of the thesis.

Once the thesis defence is finished, the public has to leave the room and the thesis committee deliberates.

The thesis committee has to issue a report and the overall grade. Then the doctoral student and the public are called to come in again and the grade is announced in public. The defence of the doctoral thesis is a public event which is announced in advance. The possible doctoral thesis grades are: Fail, Pass, Good, Excellent. Only when a doctoral thesis is graded Excellent, the members of the committee may propose a "Cum Laude mention" by secret ballot.





EXTRAORDINARY DOCTORAL THESIS AWARDS

The Extraordinary PhD Award is an honourable mention that will be included in the academic record of the person who obtains it. The Governing Council of the Universidad Politécnica de Cartagena, at the proposal of the respective Boards of the Centre, may award the honorary mention of the Extraordinary PhD Prize under the conditions established in the Regulations, to doctors who have defended their thesis in a given academic year, and provided the requirements established therein are met.

GRANTS

If you need funding to pursue your doctoral degree, you will find information on grants and predoctoral contracts by clicking on the following link. Moreover, the UPCT students have grants and financial assistance at their disposal which are announced by different institutions which collaborate to fund their studies. Among these those of the Ministry of Education, the Government of Region de Murcia and Fundación Seneca are noteworthy. At a national level, of interest the followings calls.



- The FPI grants are awarded by the Spanish Government for a duration of 48 months to graduates wishing to pursue a PhD degree associated to specific R+D projects among those financed by the “Plan Nacional de I+D+i”. The fees of master and PhD courses, as well as stays in R+D centers, are also financed by this program.
- The FPU program seeks to promote the training of PhD students through the awarding of grants for the realization of a PhD degree in any area of knowledge, in order to enable their future enrolment in the Spanish system of scientific formation and research. Grants are awarded by the Spanish Government for a maximum period of 48 months. Grants also provide funding for short stays of 2 to 4 months in other Spanish or foreign centers and for temporary transfers of the scholarship abroad for a minimum of 6 and a maximum of 12 months.
- The Industrial Doctorate grants last up to four years and cofund the contracts for predoctoral research personnel whose objective is to develop their PhD in the industrial sector (industrial research or experimental development project) At the time of signing the contract they must have been accepted on a PhD programme.



For further information on FPI and FPU grants see MINECO: LIA for Human Resources or send an e-mail to the following address: predoctoral@mineco.es.

- At European level, the Marie Skłodowska-Curie Actions applicable to PhD students must be applied for through a host university or institution. If you are interested in any of these, please contact the UPCT staff and ask about opportunities. There are currently four types of MSC Actions for PhD candidates: Innovative Training Networks (ITN), and Research and Innovation Staff Exchange (RISE)

More information is available at: <http://ec.europa.eu/research/mariecurieactions>



WHAT DO I NEED TO START?

You only need to know which one of the doctoral programmes fits you according to your research preferences. We will provide you with a tutor to help you with the admission process.

All procedures can be carried out online so you will not have to come to our offices to complete the enrollment.

CAN A DOCTORAL THESIS BE DONE REMOTELY?

Some researchs do not require to be physically on the university at all. Moreover, the current facilities with tools for online meetings do much easier the coordination with the thesis supervisor. In some cases, the research activities imply to access the laboratories to carry out tests, experiments and prototypes. Only in those cases you should need to come to the university's facilities and it is usually in an advance stage of the thesis work.

WHERE CAN I GET MORE INFORMATION?

For any further doubt you can contact us at

escueladedoctorado@upct.es.

We will be more than happy answering your questions and inviting you to initiate the amazing career of doctoral studies.



SUMMARY OF DOCTORAL PROGRAMMES

- Advanced Techniques for Research and Development in Food and Agriculture (TAIDA)

The TAIDA doctoral program encompasses all Research Lines related to any field of the Agri-food sector 'from farm to fork'. The Program includes several lines as vegetal and animal biotechnology, crop protection, soil-water-environment technology and engineering, horticulture, irrigation management, design, automation and control of greenhouses, food technology and engineering and economic issues related to those fields.



• Industrial Technologies

The PhD program on “Industrial Technologies” is focused in the field of Industry 4.0 and its main objective is to train PhDs who acquire a global vision of industrial technologies in their different aspects, such as: mechanical engineering, materials and manufacturing engineering, thermal and fluid engineering, neurotechnology, control, robotics and distributed resources, Internet of Things, Industrial Telematics, Intelligent Measurement Systems, chemical and environmental engineering, structural optimization, numerical and analytical modeling and other related areas. To this end, students are provided with quality training that allows them to carry out further research, both basic and applied, with the goal of achieving a technology transfer to the productive sector.

• Technology and Modelling Applied to Civil, Mining, and Environmental Engineering

This programme is focused on (a) the characterization, management and remediation of areas degraded by different anthropic activities; (b) the numerical and experimental modelling for geometric analysis, hydraulic, fluvial and hydrological engineering, among others; (c) the characterization and simulation of processes in underground hydrology and geothermal energy (flow and transport: salinity in underground hydrology and heat in porous media; recharge, discharge, flow and transport in underground hydrology using chemical, isotopic and hydrodynamic techniques, and modelling; management of coastal aquifers: flow and reactive transport linked to saline intrusion; use and management of underground water: natural quality, chemical background and pollution; hydrology of wetlands: characterization, modelling, classification and evaluation of environmental services; human well-being services of the underground water ecosystem, etc.





• Information and Communication Technologies

Broadly speaking, the main research lines of the Information and Communications Technologies (ICT) Program can be divided into four categories: Signal and Communications Theory (which includes radiofrequency, radiocommunications, microwaves, soundwaves, signal processing and health applications); Telematic Engineering (which includes research in networks and new services, and cyber-security); Robotics and Computer Languages (which includes artificial intelligence, machine and deep learning, software engineering, smart cities, internet of things and environmental intelligence); and finally, a transversal research line which covers technological innovation, entrepreneurship and management in the field of ICT.

• Renewable Energy and Energy Efficiency

The Renewable Energy and Energy Efficiency doctoral program is focused on analyzing and modeling renewable energy sources (RES) from a variety of perspectives. Wind, PV, biomass, batteries, solar thermal and hydrogen resources are preferred fields of interest, with applications in power system integration, refrigeration, water desalination, heat pumps and decision support systems. In addition, energy efficiency in thermal systems, buildings and industrial processes are also included as topics of research.



• Economy

DEcIDE is an interuniversity PhD program in Economics of five Spanish universities: The University of Murcia; University of Alicante; Miguel Hernández University; National University of Distance Education and the Technical University of Cartagena. The PhD program proposes 9 research topics oriented to the research on different economics fields: Health economics, Finances; Game theory; Mathematical economy; Economic history; Business cycles and Time Series Econometrics; Spatial econometrics, microeconometrics and Statistical Inference. The main aim of this doctoral program is to train students in Economic Sciences with capacity of making scientific contributions through publications of papers in the top-level scientific journals. The doctoral program is designed for candidates with an outstanding background in Economics, typically already holding a degree in the subject who wish to engage in leading doctoral research in Economic, although students with similar skills can be admitted. Students can complete their training online with the assistance of a tutor. They will also have online seminars to improve their knowledge. Contact details, together with



• Business Administration and Management (only for engineers)

The changes in the economic and societal environment, driven by globalization and the rapid evolution of technology, challenge our existing knowledge about how business firms and organizations must be managed in the twentieth-first century. One of the missions of the academic community in business administration is to provide evidence-based advice to managers, grounded on quality research. With this inter-university doctoral programme, four leading Spanish universities (Universidad Politécnica de Cartagena, Universitat Politècnica de Catalunya, Universidad Politécnica de Madrid and the Universitat Oberta de Catalunya) join efforts and look for synergies to train young researchers in acquiring the competencies required to perform cutting-edge research in the fields of management and business administration. More information about the programme, including the application form, can be found at: <https://management-phd.eu/>

- **Electrochemistry Science and Technology**

The PhD in “Electrochemistry. Science and Technology” is an official joint degree of the universities Autònoma de Barcelona, Autònoma de Madrid, Alicante, Barcelona, Burgos, Córdoba, Lleida, Murcia, Sevilla, València (Estudi General) and Politècnica de Cartagena. It is aimed at postgraduates in the fields of science or engineering who wish to train as researchers in the field of Electrochemistry. It enables students to carry out research in areas in demand both in industry and in the academic sector, such as: batteries and accumulators, metal deposits, sensors and biosensors, wastewater treatment and many others. More information about the programme can be found at:

<http://www.doctorado-ecyt.com/>





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