



**UNIVERSIDAD
DE GRANADA**



Escuela Técnica Superior de Ingeniería de Caminos, Canales y Puertos

UNIVERSITY OF GRANADA

etsiccp.ugr.es

WHY STUDY IN THE ETSICCP AT THE UNIVERSITY OF GRANADA?

Approximately 80000 individuals – students, researches, lectures, and administrative and service staff are directly linked to the UGR, making it the 4th largest university in the country. This university community has turned Granada, with its 240000 inhabitants, into a lively, vivacious and culturally rich city. Approximately 6000+ international undergraduate, masters, doctoral students undertake studies at the UGR every year, making it a truly multicultural study destination.

Furthermore, every year the University of Granada receives more than 2000 Erasmus students. As such, it is the most popular Erasmus destination in Europe. We also send more Erasmus students to foreign universities than any other European higher education institution. We are a founding member of the international Coimbra Group, an association of European universities at the forefront of higher-level education.

EXPERIENCE

- Formando profesionales de la Ingeniería Civil desde el año 1998.

QUALITY PROFESSORS

- Teaching staff that integrates Roads, Canals and Ports Engineers with extensive professional experience in different productive sectors and in continuous training.

BUSINESS RELASHIONSHIPS

- Agreements with companies for the development of professional practices and research.

ACTIVITIES WITH STUDENTS

- Collaboration with student associations for the development of cultural, artistic and sports activities.

INTERNATIONALIZATION

- The ETSICCP offers the possibility of doing studies in international mobility, both in Bachelor's and Master's degrees, in Germany, Austria, France, Ireland, Italy, Poland, Portugal, the United Kingdom, the Czech Republic and Finland, as well as in other non-European destinations and several programs of double international titles.

INFRASTRUCTURES

- Center equipped with laboratories and the law with the latest technologies equipment for teaching and research, at the service of students, as well as a specialized library with more than 65,000 copies for consultation and loan.

WIDE ACADEMIC OFFER

Civil Engineering Degree

**Civil Engineering and Business
Administration double Degree**

**Civil Engineering double International
Certification with INSA Rouen (France)**

Master's Degree in Civil Engineering

**Civil Engineering + Economics Master's
Degree**

**Civil Engineering + Environmental
Hydraulics Master's Degree**

**Civil Engineering + Techniques and
Sciences of Water Quality Master's Degree
(IdeA Master)**

**Civil Engineering + Structures Master's
Degree**

CIVIL ENGINEERING DEGREE

The Civil Engineering degree makes it possible to work as a Public Construction Engineer in any of the three different specializations (Civil constructions, Hydrology and Transport and Urban services) to develop a great amount of activities related to construction, technical service, management, planning of infrastructures, quality control, water quality, construction materials... This degree enables the graduate to apply for the Roads, Canals and Ports Master's degree and it has a total of 4 courses with a total of 240 ECTS.

First Course

1 st Semester		2 nd Semester	
Mathematical analysis	6	Statistics	6
Physics	6	Applied mathematics	9
Geology	6	Materials science and technology	6
Fundamentals of computer science	6	Legislation in civil engineering	3
Graphical engineering I	6	Topography	6

Second course

3 rd Semester		4 th Semester	
Mechanics for engineers	9	Organisation and management of construction companies	6
Further mathematics	6	Foundations in civil engineering	3
Environmental impact	3	Electrical engineering	6
Soil and Rock mechanics. Geotechnical engineering	6	Hydraulics and hydrology	9
Spatial planning and history of civil engineering	6	Graphical engineering II	6

Note: From the third course and beyond, the student must choose one of the three specializations to finish the degree. Each specialization has its own subject and competence.

Civil Construction Specialization. Third Course

5th Semester		6th Semester	
Theory of structures	9	Reinforced concrete	6
Health and safety in building works	3	Analysis of structures	6
Roads	6	Construction procedures I	6
Marine and coastal engineering	6	Sanitary engineering in civil construction	6
Geotechnics of civil building works	6	Advanced methods for site investigation. *	6
		Geometrical design of linear construction works*	6
		Further materials*	6

Civil Construction Specialization. Fourth Course

7th Semester		8th Semester	
Metallic structures	6	Undergraduate dissertation**	12
Project management and organisation	6	Railways	6
Building	6	Geographic information systems and rendering*	6
Pre-fabricated elements	3	Work placement *	6
Construction procedures II	9	Marine construction projects*	6
Information technologies in civil works*	6	Further concrete and metallic structures*	6
		Dynamic structural analysis*	6

****Optional subjects: during the Degree, a total of 18 elective ECTS credits must be taken. These credits can be of any elective course offered, regardless of the semester in which they are taught. It is also worth noting that you can take compulsory subjects from other mentions as optional.***

*****The Undergraduate Dissertation will be a construction project following the spanish regulations.***

Basic formation	Specific technology of the speciality
Obligatory	Optional

Hydrology Specialization. Third Course

5th Semester		6th Semester	
Theory of structures	9	Reinforced concrete	6
Health and safety in building works	3	Analysis of structures	6
Power systems	6	Construction procedures I	6
Further hydraulics and hydrology	6	Sanitary engineering	6
Environmental engineering and water quality	6	Hydraulics works I	6

Hydrology Specialization. Fourth Course

7th Semester		8th Semester	
Metallic structures	6	Undergraduate dissertation **	12
Project management and organisation	6	Hydrogeology and aquifer works	3
Coastal hydraulics	6	Hydraulic planning	3
Hydraulics works II	6	Work placement *	6
Water treatment systems*	6	Geographic information systems and rendering*	6
Coastal engineering*	6	Analysis of supply networks and sanitation*	6
Fluvial engineering*	6	Integrated water management*	6
Computational hydraulics	6		
Information technologies in civil works*	6		

****Optional subjects: during the Degree, a total of 18 elective ECTS credits must be taken. These credits can be of any elective course offered, regardless of the semester in which they are taught. It is also worth noting that you can take compulsory subjects from other mentions as optional.***

*****The Undergraduate Dissertation will be a construction project following the spanish regulations.***

Basic formation	Specific technology of the speciality
Obligatory	Optional

Transport and Urban Service Specialization. Third Course

5th Semester		6th Semester	
Theory of structures	9	Reinforced concrete	6
Health and safety in building works	3	Analysis of structures	6
Roads and airports	6	Construction procedures I	6
Transport systems	6	Urbanism	6
Urbanism and spatial planning	6	Special lighting and security*	6
		Hydrological system in spatial planning*	6

Transport and Urban Service Specialization. Fourth Course

7th Semester		8th Semester	
Metallic structures	6	Undergraduate dissertation **	12
Project management and organisation	6	Port and coastline management	3
Urban sanitation engineering	6	Lighting techniques	3
Intermodal transport: infrastructures and service	6	Railways and automated transport	6
Further transport infrastructures*	6	Geographic information systems and rendering*	6
Equality, cooperation and technology for development *	6	Work placement *	6
Information technologies in civil works*	6	Organisation of urban water and waste services*	6
		Mobility, traffic and transport*	6

****Optional subjects: during the Degree, a total of 18 elective ECTS credits must be taken. These credits can be of any elective course offered, regardless of the semester in which they are taught. It is also worth noting that you can take compulsory subjects from other mentions as optional.***

*****The Undergraduate Dissertation will be a construction project following the spanish regulations.***

Basic formation	Specific technology of the speciality
Obligatory	Optional

CIVIL ENGINEERING AND BUSINESS ADMINISTRATION DOUBLE DEGREE

This double qualification enables to exercise the profession of Civil Engineer in the Mention of Transport and Urban Services and delivers the skills of the professional of the Administration and Business Management, trained to perform tasks of management, advice and evaluation in business organizations, in which the professional career of the engineer is frequently developed. The degree consists of 5 academic courses and 393 ECTS.

Basic formation	Obligatory
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First Course

	1° Semester		2° Semester	
BA	Political economics	6	Microeconomics	6
	Fundamentals of business management and administration	6	History of contemporary world economic development	6
			Introduction to law	6
CIVIL	Mathematical analysis	6	Materials science and technology	6
	Physics	6	Applied mathematics	9
	Fundamentals of computer science	6	Topography	6
	Graphical engineering I	6		

Second course

	3° Semester		4° Semester	
BA	Introduction to marketing	6	General accounting	6
	Introduction to financial operations	6	Quantitative techniques II	6
	Quantitative techniques I	6	Commercial management	6
	Macroeconomics	6		
CIVIL	Mechanics for engineers	9	Further mathematics	6
	Geology	6	Electrical engineering	6
	Environmental impact	3	Graphical engineering II	6

Third Course

5° Semester			6° Semester	
BA	Financial accounting I	6	Financial accounting II	6
	Business management	6	Financial operations analysis	6
	Econometrics	6	Quantitative methods	6
CIVIL	Soil and rock mechanics. Geotechnics.	6	Hydraulics and hydrology	9
	Roads and airports	6	Urbanism	6
	Spatial planning and history of civil engineering	6	Foundations in civil engineering	3
			Construction procedures I	6

Fourth Course

7° Semester			8° Semester	
BA	Management accounting	6	Analysis of financial statements	6
	Operations management I	6	Human resource management I	6
	World economics	6	Business organisation	6
			Spanish economics	6
CIVIL	Urbanism and spatial planning	6	Analysis of structures	6
	Transport systems	6	Reinforced concrete	6
	Theory of structures	9	Urban sanitation engineering	6
	Health and safety in building works	3		

Fifth Course

9° Semester			10° Semester	
BA	Strategic management I	6	Strategic management II	6
	Financial management	6	Undergraduate dissertation	6
	Business creation	6		
	Tax law	6		
CIVIL	Metallic structures	6	Lighting techniques	3
	Intermodal transport: infrastructures and service	6	Port and coastline management	3
	Project management and organisation	6	Railways and automated transport	6
			Undergraduate dissertation	12

MASTER'S DEGREE IN CIVIL ENGINEERING

The Master in Engineering of Roads, Canals and Ports, according to the order CIN 309/2009, closes the formative cycle initiated with the degree in Civil Engineering, essential to perform the regulated profession of Roads, Canals and Ports Engineer. The curriculum of this Master offers a solid generalist technical training that enables professional practice in all areas of Civil Engineering. The technical base obtained will solve the problems raised in the design, construction, operation, maintenance and management of infrastructure and building, as well as implementing new technologies in the construction process and decision-making in planning the territory, essential urban services, transport, traffic, mobility and energy resources, all with the least impact on the environment. The master's degree consists of a total of 120 ECTS (including formative complements to the degree), which are completed in 4 semesters.

First Course

1st Semester		2nd Semester	
Hydraulic works and exploitation / transport infrastructures**	6	Building and prefabrication**	6
Geotechnics / transports**	6	Port and coastal engineering / urban and territorial planning**	6
Numerical analysis	4.5	Dams and hydroelectric exploitation / transports**	6
Equations and partial derivatives	4.5	Advanced ground engineering	6
Continuum mechanics	4.5	Management of water purification and wastewater treatment	4.5
Advanced fluid mechanics	4.5	Prestressed concrete	3
Advanced energy systems in engineering	3	Advanced construction techniques	3
		Airports	3

**** Formative complements to the degree; which are to be taken according to the specialization and the university of origin. The subjects to be studied will be determined by the master's commission, but in general, a maximum of 30 ECTS must be attended. There are tables of recognition of subjects in the web page of the master's degree of the University of origin and the according specialization (in the case of the University of Granada).**

Second course

3rd Semester		4th Semester	
Advanced structure analysis	6	Work placement, and professional and research experiences	6
Planning and management of infrastructures and transport services	6	Master's dissertation	12
Dynamics of the ocean-atmosphere- coastal system	4.5		
Advanced planning, design, and management of water works	4.5		
Urban and spatial distribution, planning, and management	4.5		
Bridges	3		
Integrated management of projects and works	3		

General formation		Special technology
Scientist formation		Professional experience

CIVIL ENGINEERING + ECONOMICS MASTERS DEGREE

This Double Master not only enables to practice the profession of Civil Engineer, Channels and Ports, but also offers an important training in matters related to business management, one of the Achilles heels of the current engineer's training. The subjects related to the Master's Degree in Economics are taught in English. The double master's degree consists of a total of 136 ECTS (plus the necessary formative complements), which are completed in 4 semesters.

First Course

1st Semester		2nd Semester	
Hydraulic works and exploitation / transport infrastructures**	6	Building and prefabrication**	6
Geotechnics / transports**	6	Port and coastal engineering / urban and territorial planning**	6
Numerical analysis	4.5	Dams and hydroelectric exploitation / transports**	6
Equations and partial derivatives	4.5	Advanced ground engineering	6
Continuum mechanics	4.5	Management of water purification and wastewater treatment	4.5
Advanced fluid mechanics	4.5	Prestressed concrete	3
Advanced energy systems in engineering	3	Advanced construction techniques	3
Microeconomics	4	Airports	3

**** Formative complements to the degree; which are to be taken according to the specialization and the university of origin. The subjects to be studied will be determined by the master's commission, but in general, a maximum of 30 ECTS must be attended. There are tables of recognition of subjects in the web page of the master's degree of the University of origin and the according specialization (in the case of the University of Granada).**

Second course

3rd Semester		4th Semester	
Advanced structure analysis	6	Work placement, and professional and research experiences	6
Planning and management of infrastructures and transport services	6	Master's dissertation	12
Dynamics of the ocean-atmosphere- coastal system	4.5		
Advanced planning, design, and management of water works	4.5		
Urban and spatial distribution, planning, and management	4.5		
Bridges	3		
Integrated management of projects and works	3		
Research methodology	4		

In addition to the subjects completed previously, students will be assigned a total of 24 elective ECTS credits, that is, 6 subjects of module III of the Master of Economics to choose from among the following:

Operations management	4	Technological innovation management
Flexibility and strategic change	4	Research methods in microeconomics(M)
Quality management	4	Research methods in management
Leadership with emotional intelligence	4	Evaluation of public programmes and policies
Strategic management	4	Industrial economics and banking
International economics	4	Growth and development economics
Information systems management	4	

General Training RCPM		
RCPM scientific training		Common RCPM -economics
RCPM specific technology		Economics

CIVIL ENGINEERING + ENVIRONMENTAL HYDRAULICS MASTERS DEGREE

The Double Master's Degree in Roads, Canals and Port Engineering + Master's Degree in Environmental Hydraulics stands out for the high compatibility of both degrees, belonging to the Engineering branch, maintaining the professional qualification of Road, Canal and Port Engineer. The Master's degree consists of a total of 120-150 ECTS depending on the formative complements, which are completed in 4 semesters.

First Course

1st Semester		2nd Semester	
Hydraulic works and exploitation / transport infrastructures**	6	Building and prefabrication**	6
Geotechnics / transports**	6	Port and coastal engineering / urban and territorial planning**	6
Numerical analysis	4.5	Dams and hydroelectric exploitation / transports**	6
Equations and partial derivatives	4.5	Advanced ground engineering	6
Continuum mechanics	4.5	Management of water purification and wastewater treatment	4.5
Advanced fluid mechanics	4.5	Prestressed concrete	3
Advanced energy systems in engineering	3	Advanced construction techniques	3
		Airports	3
		Transport and mixing in the continental shelf and coastal and transitional areas	7
		Coastal processes and coast evolution	6

**** Formative complements to the degree; which are to be taken according to the specialization and the university of origin. The subjects to be studied will be determined by the master's commission, but in general, a maximum of 30 ECTS must be attended. There are tables of recognition of subjects in the web page of the master's degree of the University of origin and the according specialization (in the case of the University of Granada).**

Second course

3rd Semester		4th Semester	
Advanced structure analysis	6	Integrated management of ports and coastal areas	6
Planning and management of infrastructures and transport services	6	Planning and management	5
Dynamics of the ocean-atmosphere- coastal system	4.5	External internships and professional and investigation experiences	6
Advanced planning, design, and management of water works	4.5	Master's dissertation	12
Urban and spatial distribution, planning, and management	4.5	Master's dissertation for double title	6
Bridges	3		
Integrated management of projects and works	3		

General Training RCPM			
RCPM scientific training		Common RCPM – environmental hydraulics	
RCPM specific technology		Environmental hydraulics	

CIVIL ENGINEERING + TECHNIQUES AND SCIENCES OF WATER QUALITY MASTERS DEGREE (IdeA Master)

The Double Master's Degree offers a unique postgraduate training in Spanish Universities. Enables to practice the profession of Roads, Canals and Ports Engineer, and provides an integrated vision of the knowledge, methods, techniques and advanced tools for the implementation of environmental regulations derived from the Water Framework Directive. The master's degree consists of a total of between 132-135 ECTS (plus the necessary formative complements), which are completed in 4 semesters with two profiles: professional and researcher.

First Course

1^{er} Semester		2^o Semester	
Hydraulic works and exploitation / transport infrastructures**	6	Building and prefabrication**	6
Geotechnics / transports**	6	Port and coastal engineering / urban and territorial planning**	6
Numerical analysis	4.5	Dams and hydroelectric exploitation / transports**	6
Equations and partial derivatives	4.5	Advanced ground engineering	6
Continuum mechanics	4.5	Prestressed concrete	3
Advanced fluid mechanics	4.5	Advanced construction techniques	3
Advanced energy systems in engineering	3	Airports	3
Transitional waters	3	Numerical analysis for the prediction and treatment of water quality	3
Legislative and regulatory framework: water framework directive	2	Interface pollution	4
Lotic systems	3	Pollution in water masses	5
		Management of water purification and wastewater treatment	4.5

**** Formative complements to the degree; which are to be taken according to the specialization and the university of origin. The subjects to be studied will be determined by the master's commission, but in general, a maximum of 30 ECTS must be attended. There are tables of recognition of subjects in the web page of the master's degree of the University of origin and the according specialization (in the case of the University of Granada).**

Second course

3 ^{er} Semester			
Advanced structure analysis	6	Bridges	3
Planning and management of infrastructures and transport services	6	Integrated management of projects and works	3
Dynamics of the ocean-atmosphere- coastal system	4.5	Lentic systems	3
Advanced planning, design, and management of water works	4.5	Groundwater masses	2
Urban and spatial distribution, planning, and management	4.5	Economic principles of water management	2
4 ^o Semester			
Idea Professional Profile		Idea Researcher Profile	
Advanced technologies for urban sewage treatment (1)	3	Modelling and control of bioreactors	3
Modelling and control of bioreactors (2)	3	Advanced computational methods	3
Industrial waste water treatment (3)	3	Advanced technologies for urban sewage treatment (7)	3
Design and construction of treatment plants (4)	3	Water quality management in collection, distribution and sanitation networks (7)	3
Water quality management in collection, distribution and sanitation networks (5)	3		
Advanced computational methods (6)	3	Industrial waste water treatment (9)	3
Work placement	12	Research practicum	6
Master's dissertation (ICCP)	12	Master's dissertation (ICCP)	12
Master's dissertation IdeaA	6	Master's dissertation IdeaA	6

****You have to choose a subject among those marked with (1), (2), (3) and another among (4), (5), (6) if the professional profile is chosen. In the research profile, one will choose between (7), (8), and (9).**

General Training RCPM			
RCPM Scientific Training		Common RCPM – techniques and Sciences of Water Quality	
RCPM Specific Technology		Techniques and sciences of water quality	

CIVIL ENGINEERING + STRUCTURES MASTERS DEGREE

The Double Master's Degree in Civil Engineering, Canals and Ports + Structures, offers a unique postgraduate training in Spanish Universities. Enables to practice the profession of Roads, Canals and Ports Engineer and provides knowledge with an increasing demand in professionals specializing in structures, both in new work, as in tasks of maintenance, repair, renovation and reconditioning of existing structures. The master's degree consists of a total of 120 ECTS (plus the necessary formative complements), which are completed in 4 semesters.

First Course

1 ^{er} Semester		2 ^o Semester	
Hydraulic works and exploitation / transport infrastructures**	6	Building and prefabrication**	6
Geotechnics / transports**	6	Port and coastal engineering / urban and territorial planning**	6
Numerical analysis	4.5	Dams and hydroelectric exploitation / transports**	6
Equations and partial derivatives	4.5	Advanced ground engineering	6
Continuum mechanics	4.5	Management of water purification and wastewater treatment	4.5
Advanced fluid mechanics	4.5	Prestressed concrete	3
Advanced energy systems in engineering	3	Advanced construction techniques	3
Computational mechanics 1: finite elements	3.6	Airports	3
Structural dynamics	3.6	Subject to choose from the master in structures	3.6
Stochastic processes	3.6	Subject to choose from the master in structures	3.6

**** Formative complements to the degree; which are to be taken according to the specialization and the university of origin. The subjects to be studied will be determined by the master's commission, but in general, a maximum of 30 ECTS must be attended. There are tables of recognition of subjects in the web page of the master's degree of the University of origin and the according specialization (in the case of the University of Granada).**

Second course

3 ^{er} Semester		4 ^o Semester	
Planning and management of infrastructures and transport services	6	Work placement	6
Dynamics of the ocean-atmosphere- coastal system	4.5	Master's dissertation (ICCP)	12
Advanced planning, design, and management of water works	4.5	Master's dissertation (Structures)	24
Urban and spatial distribution, planning, and management	4.5		
Bridges	3		
Integrated management of projects and works	3		

General Training RCPM			
RCPM scientific training		Common RCPM -structures	
RCPM specific technology		Structures	



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