



Teaching Guide

Identifying Data					2024/25
Subject (*)	Master`s Dissertation		Code	632549032	
Study programme	Máster Universitario en Xestión Sostible da Auga				
Descriptors					
Cycle	Period	Year	Type	Credits	
Official Master's Degree	2nd four-month period	Second	Obligatory	18	
Language	Spanish				
Teaching method	Face-to-face				
Prerequisites					
Department					
Coordinador			E-mail		
Lecturers			E-mail		
Web					
General description	<p>O estudantado desenvolverá un traballo orixinal de forma individual que presentará e defenderá ante un tribunal universitario. Este consistirá en identificar no problema a resolver ou proxecto as restricións sociais, xurídicas, de seguridade, ambientais, económicas e tecnolóxicas. Realizar, se procede, unha reflexión sobre a responsabilidade social ou ética vinculada ao desenvolvemento do TFM. Comunicar de forma precisa e sen ambigüidades, tanto de forma escrita como oral, coñecementos, procedementos, argumentos, resultados, ideas e conclusións, a públicos especializados e non especializados no ámbito da auga. Integrar coñecementos, metodoloxías procedimentais e competencias adquiridas previamente para resolver un problema relacionado co ámbito da auga na súa concepción máis ampla.</p> <p>Se asignará a cada alumno/a unha persoa tutora, quen orientará na elaboración do traballo, redacción do documento e preparación da exposición pública. O documento final onde se plasmará o traballo realizado deberá conter, polo menos: (i) obxectivos, (ii) metodoloxía, (iii) resultados, (iv) lexislación e/ou normativa sectorial e transversal aplicable no seu caso, (v) estudo de impacto ambiental no seu caso, (vi) orzamento no seu caso, (vii) conclusións e (viii) bibliografía. Finalmente, sinalar que, en relación ás competencias específicas, traballaranse as relacionadas directamente co ámbito no que se desenvolva o Traballo de Fin de Máster.</p>				

Study programme competences / results

Code	Study programme competences / results
A1	CON1 Describe the principles, concepts, and dimensions that encompass integrated water resources management and its role as a key tool for achieving water security and advancing the associated Sustainable Development Goals (SDGs). Identify problems related to water development, use, and access. Identify and compare water legislation at the European, national, regional, and local levels, as well as interpret conceptual frameworks on sustainable development and their application to the water sector, with a specific focus on the SDGs. Provide tools to explain the economics of water. Enumerate aspects of public taxation that may be relevant in water management.
A2	CON2 Identify the different urban systems directly or indirectly linked to water. Outline their interrelationships and apply an ecosystemic and interdisciplinary approach. Recognize the various water supply sources, the implications of their use, and their impact on natural degradation, as well as their possibilities for recycling and reuse. Identify and explain the key aspects of integrating the circular economy into the urban water system. Explain the typical tools used for conceptualizing water-related urban systems. Review current trends in nature-based solutions for managing urban stormwater. Interpret the territory to advocate for more centralized or decentralized approaches to urban water management in areas with dispersed population and economic activities.
A3	CON3 Explain the foundations of chemistry, biology, and morphology of continental aquatic ecosystems. Provide the common methodology of the EU for assessing the status of water bodies and its adaptation to different territorial contexts. Identify models for assessing pressures and impacts on water bodies, understanding their opportunities and limitations. Suggest solutions for the maintenance and improvement of the status of water bodies across their different quality elements. Identify bioindicators.
A4	CON4 Enumerate the water treatment systems, both for supplying populations or industries, and for the purification and subsequent return to natural environments and reuse of regenerated water. Identify and describe the emerging challenges in water treatment.



A5	CON5 Describe the fundamentals of water resources assessment and the main tools for hydrological planning, based on the Water Framework Directive, legislation, and global frameworks for water resource allocation, including the environmental component. Demonstrate that ecosystem services linked to water have high added value and that nature-based solutions enable a sustainable approach to water resource management.
A6	CON6 Identify the risks associated with water, with a special focus on floods and droughts. Provide information on legislation and available technology for managing hydrological risk
A7	CON7 Demonstrate through specific cases that geographic information systems (GIS) are a fundamental tool in water management, applied to the management of water resources. Explain the basic and advanced functionalities of GIS for the development, analysis, and interpretation of hydrological spatial information.
A8	CON8 Recognize the main tools for the management of hydrological data and water-related information, and how data can be used for decision-making through methods based on statistical concepts or artificial intelligence
B1	HAB1 Use and compare water legislation and conceptual frameworks related to sustainable development. Operate with tools that allow estimating economic variables (macro and micro) related to water, and employ the tools to apply appropriate taxation and cost policies to water
B2	HAB2 Construct conceptual models of the urban water system by interacting with different subsystems and applying appropriate singularities derived from urban planning and land management. Develop strategies for implementing nature-based solutions.
B3	HAB3 Select and operate innovative treatment systems adapted to different realities, geographical environments, and quality requirements, including emerging challenges and applications.
B4	HAB4 Analyze the European Union's Water Framework Directive and Floods Directive, their technical implications, and their implementation through hydrological planning. Utilize computer tools for problem-solving related to water management within the framework of both directives. Develop measurements and analysis of hydrologically relevant data and data related to the state of water bodies. Evaluate the effect of urban use on the watershed and analyze the consequences of discharging water (treated or untreated) into receiving water bodies. Additionally, develop strategies to protect areas of surface water and groundwater generation within watersheds, based on the principle of recognizing and enhancing ecosystem services.
B5	HAB5 Utilize Geographic Information Systems (GIS) for the processing and development of geospatial data. Manage GIS tools, statistical tools, and artificial intelligence-based tools for data analysis related to water management.
C1	COM1 Validate, evaluate, and adapt water legislation for a specific situation. Synthesize the economic variables involved in a problem related to water management. Adapt conceptual frameworks, particularly the Sustainable Development Goals (SDGs), to a specific problem
C2	COM2 Integrate all urban water systems into a comprehensive planning framework for an entire area. Evaluate their performance and optimize them. Compare different types of solutions, including those suitable for scattered settlements and nature-based solutions
C3	COM3 Judge the performance and suitability of various water treatment proposals. Compare different alternatives. Incorporate expert judgment in the planning of water treatment systems, considering emerging challenges and green solutions.
C4	COM4 Integrate the various sources that generate the water supply and the uses that create the demand into systems or balances that allow for proper management. Plan the water resource at both macro and micro scales, allocating water to different uses while integrating environmental and social demands
C5	COM5 Evaluate the impact of floods and droughts and propose strategies to mitigate them in accordance with legislation, applying new technologies. Propose sustainable and socially acceptable solutions.
C6	COM6 Integrate diverse data sources into decision frameworks to facilitate improved management of water resources

Learning outcomes

Learning outcomes	Study programme competences / results
-------------------	---------------------------------------



Desenvolver un traballo orixinal de forma individual e presentar e defender o mesmo ante un tribunal universitario.	AJ1 AJ2 AJ3 AJ4 AJ5 AJ6 AJ7 AJ8	BJ1 BJ2 BJ3 BJ4 BJ5	CJ1 CJ2 CJ3 CJ4 CJ5 CJ6
Realizar, se procede, unha reflexión sobre a responsabilidade social ou ética vinculada ao desenvolvemento do TFM.	AJ1 AJ2 AJ3 AJ4 AJ5 AJ6 AJ7 AJ8	BJ1 BJ2 BJ3 BJ4 BJ5	CJ1 CJ2 CJ3 CJ4 CJ5 CJ6
Comunicar de forma precisa e sen ambigüidades, tanto de forma escrita como oral, coñecementos, procedementos, argumentos, resultados, ideas e conclusións, a públicos especializados e non especializados no ámbito da auga.	AJ1 AJ2 AJ3 AJ4 AJ5 AJ6 AJ7 AJ8	BJ1 BJ2 BJ3 BJ4 BJ5	CJ1 CJ2 CJ3 CJ4 CJ5 CJ6
Integrar coñecementos, metodoloxías procedimentais e competencias adquiridas previamente para resolver un problema relacionado co ámbito da auga na súa concepción máis ampla	AJ1 AJ2 AJ3 AJ4 AJ5 AJ6 AJ7 AJ8	BJ1 BJ2 BJ3 BJ4 BJ5	CJ1 CJ2 CJ3 CJ4 CJ5 CJ6
Identificar no problema a resolver ou proxecto as restricións sociais, xurídicas, de seguridade, ambientais, económicas e tecnolóxicas.	AJ1 AJ2 AJ3 AJ4 AJ5 AJ6 AJ7 AJ8	BJ1 BJ2 BJ3 BJ4 BJ5	CJ1 CJ2 CJ3 CJ4 CJ5 CJ6

Contents	
Topic	Sub-topic



<p>Cada curso académico se ofrecerá una relación de temas sobre los que puede versar el Trabajo Fin de Máster, asignando a cada alumno/a un tutor/a, quien orientará en la elaboración del trabajo, redacción del documento y preparación de la exposición pública.</p> <p>El documento final donde se plasmará el trabajo realizado deberá contener, al menos: (i) objetivos, (ii) metodología, (iii) resultados, (iv) legislación y/o normativa sectorial y transversal aplicable en su caso, (v) estudio de impacto ambiental en su caso, (vi) presupuesto en su caso, (vii) conclusiones y (viii) bibliografía.</p> <p>En relación con las competencias específicas, se trabajarán de forma específica las relacionadas directamente con el ámbito en el que se desarrolle el Trabajo Fin de Máster.</p>	
--	--

Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Oral presentation	A1 A2 A3 A4 A5 A6 A7 A8 B1 B2 B3 B4 B5 C1 C2 C3 C4 C5 C6	1	33	34
Supervised projects	A1 A2 A3 A4 A5 A6 A7 A8 B1 B2 B3 B4 B5 C1 C2 C3 C4 C5 C6	16	400	416
Personalized attention		0	0	0

(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies	
Methodologies	Description
Oral presentation	Exposición por parte do alumnado ante un tribunal dun tema sobre contidos da materia ou resultados dun traballo ou proxecto realizado de forma individual.
Supervised projects	El alumnado elaborará, de modo individual un documento sobre la temática de la materia seleccionada , preparación de ensayos, resumen de lecturas, conferencias, etc.

Personalized attention	
Methodologies	Description
Supervised projects Oral presentation	As dúbidas e cuestións expostas polo estudiantado en relación ao desenvolvemento da materia e normas para a elaboración, defensa e avaliación do TFM serán atendidas pola persoa coordinadora da materia. As dúbidas e cuestións específicas relativas á temática do TFM serán atendidas polas persoas titoras do TFM.

Assessment			
Methodologies	Competencies / Results	Description	Qualification



Supervised projects	A1 A2 A3 A4 A5 A6 A7 A8 B1 B2 B3 B4 B5 C1 C2 C3 C4 C5 C6	A persoa titora do traballo elaborará un informe de valoración do mesmo. Os informes de titorización poderán ser considerados para a cualificación final. De ser o caso, a CAI publicará os % de ponderación con antelación ás datas de defensa do TFM.	0
Oral presentation	A1 A2 A3 A4 A5 A6 A7 A8 B1 B2 B3 B4 B5 C1 C2 C3 C4 C5 C6	O tribunal avaliador valorará a memoria do traballo, dificultade, exposición e defensa.	100

Assessment comments

Sources of information

Basic

Complementary

Recommendations

Subjects that it is recommended to have taken before

Subjects that are recommended to be taken simultaneously

Subjects that continue the syllabus

Other comments

(*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.