



Guía Docente				
Datos Identificativos			2013/14	
Asignatura (*)	Físico-química e calidade da auga	Código	632844203	
Titulación				
Descritores				
Ciclo	Período	Curso	Tipo	Créditos
Mestrado Oficial	1º cuatrimestre	Primeiro	Obrigatoria	6
Idioma				
Prerrequisitos				
Departamento	Tecnoloxía da Construción			
Coordinación	Delgado Martin, Jordi	Correo electrónico	jorge.delgado@udc.es	
Profesorado	Delgado Martin, Jordi	Correo electrónico	jorge.delgado@udc.es	
Web	caminos.udc.es/info/asignaturas/201/masterindex.html			
Descrición xeral	Basic principles of water chemistry. Sampling procedures and design of sampling surveys. Analytical techniques for the determination and measurement of chemical constituents of water and its contaminants. Assessment of the quality of analytical data. Data analysis and interpretation: Graphic approaches. Statistical description of water chemistry data. Hydrochemical processes. Introduction to hydrochemical modelling.			

Competencias da titulación	
Código	Competencias da titulación

Resultados da aprendizaxe			
Competencias de materia (Resultados de aprendizaxe)	Competencias da titulación		
Learning the basic principles of water chemistry.	AM2 AM5 AM16	BM1 BM4 BM5 BM9	CM2 CM3 CM6 CM7 CM8
Learning the basic principles of the analytical techniques aimed at quantifying the concentrations of water contaminants and their constituents.	AM2 AM16	BM1 BM2 BM4 BM5 BM7 BM9	CM2 CM3 CM6 CM7 CM8
Ability to plan and execute sampling surveys for water chemistry	AM1 AM2 AM20 AM21 AM25	BM1 BM2 BM3 BM5 BM7 BM8 BM9	CM2 CM3 CM8
Ability to establish relationships between physico-chemical data and the chemical state of a water body or the prescribed legal environmental quality objectives.	AM1 AM25	BM2 BM5 BM7	CM2 CM3 CM6 CM7 CM8



Ability to perform statistical descriptions relative to the chemical quality of water.	AM2 AM16 AM20 AM21	BM1 BM2 BM4 BM7 BM8 BM9	CM2 CM3 CM6 CM7 CM8
Ability to perform graphical representations of water chemistry	AM2 AM25	BM1 BM2 BM3 BM8 BM9	CM2 CM3 CM6 CM7 CM8
Learning basic hydrochemical processes	AM16 AM19	BM1 BM2 BM7 BM9	CM2 CM7 CM8
Learning the basic principles of hydrochemical modelling	AM21	BM1 BM2 BM7 BM9	CM2 CM3 CM8

Contidos	
Temas	Subtemas
Basics of water chemistry	Structure and properties of water Mol and stoichiometry Aqueous interactions and chemical bonding Concentration units Colligative properties Mass action law and the equilibrium constant
Sampling and monitoring	Routine parameters Special determinations In situ vs. laboratory determinations Sampling surveys for ground, precipitation, stream and lake/reservoir waters Sampling frequency
Analytical techniques and quality assessment	Accuracy, precision, bias Detection and quantification limits Titrations Analytical techniques (spectrophotometry, ICP, ...)
Data analysis and interpretation	Fundamentals of descriptive statistics Graphic analysis of water chemistry data Time series representation and analysis
Hydrochemical processes and modelling	Chemical reactions and temperature dependence Equilibrium vs. kinetic processes Ion speciation Acidity and alkalinity Solid dissolution/precipitation processes Ion exchange and sorption Redox processes Aqueous modelling with PHREEQC

Planificación



Metodoloxías / probas	Horas presenciais	Horas non presenciais / traballo autónomo	Horas totais
Sesión maxistral	30	30	60
Seminario	30	30	60
Atención personalizada	30	0	30

*Os datos que aparecen na táboa de planificación son de carácter orientativo, considerando a heteroxeneidade do alumnado

Metodoloxías	
Metodoloxías	Descrición
Sesión maxistral	Regular lectures where the main theoretical contents of the subjects are regarded
Seminario	Practical lectures related to the theoretical aspects regarded at the magistral lectures

Atención personalizada	
Metodoloxías	Descrición
Seminario	Personalized attention to be provided for the seminars

Avaliación		
Metodoloxías	Descrición	Cualificación
Seminario	The attendance to the seminars and the work being developed at the seminars will be considered for the final mark	50
Sesión maxistral	The knowledge of the concepts developed at the magistral lectures will be assessed and considered for the final mark	50

Observacións avaliación

Fontes de información	
Bibliografía básica	<ul style="list-style-type: none"> - Werner Stumm and James J. Morgan (1996). Aquatic Chemistry: Chemical Equilibria and Rates in Natural Waters (3rd Ed.). Wiley Interscience - C.A.J. Appelo and D. Postma (2005). Geochemistry, Groundwater And Pollution (2nd Ed.). Balkema - John D. Hem (1985). Study And Interpretation of the Chemical Characteristics of Natural Water. U.S. Geological Survey - James I. Drever (1997). The Geochemistry of Natural Waters: Surface and Groundwater Environments (3rd Edition). Prentice Hall - Arthur Hounslow (1995). Water Quality Data: . Lewis Publishers
Bibliografía complementaria	

Recomendacións
Materias que se recomenda ter cursado previamente
Materias que se recomenda cursar simultaneamente
Materias que continúan o temario
Observacións



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