UniversidadeVigo

Subject Guide 2016 / 2017

DENTIF II	
Subject	Physical chemistry
Code	V11G200V01603
Study	(*)Grao en
programme	e Ouímica
Descriptors	s ECTS Credits Choose Year Quadmester
	9 Mandatory 3rd 2nd
Teaching	Spanish
language	Galician
Departmen	nt
Coordinato	or Bravo Díaz, Carlos Daniel
Lecturers	Bravo Díaz, Carlos Daniel
	Fernández Nóvoa, Alejandro
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Web	http://faitic.uvigo.es/
General description	The matter provides training in applications of Physical Chemistry of great importance, like Chemical Kinetics including Catálisis, surface phenomena, Macromolecules and Colloids as well as some foundations of Electrochemistry.
Competen	ncies
includ C14 Demo macro C19 Apply C20 Evalua C21 Recog C22 Proces C23 Preser C26 Perfor C27 Monitor recoro C28 Interp the ap C29 Demo precis	ding catalysis and reaction mechanisms onstrate knowledge and understanding of essential facts, concepts, principles and theories: relationship between oscopic properties and properties of individual atoms and molecules, including macromolecules reknowledge and understanding to solve basic problems of quantitative and qualitative nature ate, interpret and synthesize data and chemical information gnize and implement good scientific practices for measurement and experimentation ess and perform computational calculations with chemical information and chemical data int oral and written scientific material and scientific arguments to a specialized audience rm common laboratory procedures and use instrumentation in synthetic and analytical work for, by observation and measurement of physical and chemical properties, events or changes, and document and d them in a consistent and reliable way oret data derived from laboratory observations and measurements in terms of their significance and relate them is ppropriate theory onstrate skills for numerical calculations and interpretation of experimental data, with special emphasis on sion and accuracy
D1 Comm	nunicate orally and in writing in at least one of the official languages of the University
D3 Learn	independently
D4 Search	h and manage information from different sources
D5 Use in	nformation and communication technologies and manage basic computer tools
D6 Use m	nathematics including error analysis, estimates of orders of magnitude, correct use of units and data
renres	sentations
vlaqA 70	r theoretical knowledge in practice
D8 Team	work
D9 Work	independently
D14 Analyz	ze and synthesize information and draw conclusions
D15 Evalua	ate critically and constructively the environment and oneself
Learning	outcomes
Exported r	Training and Learning

Expected results from this subject

Training and Learning Results

Describe the general mechanism of the process of transport and *particularizario for the transport C7 D1 of distinct physical properties. Comprise the origin of the lonic conductivity. Know apply this C14 D3 Knowledge to the determination of thermodynamic parameters like constants of balance. C19 D4 or analysis of data to obtain equations of thermodynamic parameters like constants of balance. C19 D4 of analysis of data to obtain equations of thermodynamic parameters like constants of balance. C23 D4 of analysis of data to obtain equations of speed of complex processes from the corresponding C19 D4 Kinetical chemical. Obtain equations of speed of complex processes from the corresponding C19 D4 Kinetical chemical. Obtain equations of speed of complex processes from the corresponding C19 D4 Kinetical treatment-formal general for both cases. D5 Describe the foundation of the distinct experimental technicians available for the kinetical study of C20 D1 the chemical reactions. C27 D3 C28 D4 D4 Kinetical reactions. C27 D1 relate the same with the mechanisms of reaction. C27 D4 D7 Explain the fundamental hypotheses of the distinct theories on the chemical change, as well as the C7 D1 results and the limitations of each one of them (Theory of Collisions and Theory of the State of C19 D4 Fransition and know apply them like tool in the analysis of kinetical results). D9 Exclust and the limitations of each one of them (Theory of Collisions and Theory of the State of C14 D3 Transition and know apply them like tool in the analysis of kinetical results). D9 Exclust and the binicital specifies the relativity and when the distinct types C19 D3 of "catallisis D4 Explain the principles that govern the phenomena of adsorption on solid surfaces and distinguish C14 D3 concrete rosition. C19 D3 Explain the nature and the distinct types of systems *coloidales. Comprise the origin of the distinct types of systems *coloidales. D9 Explain the nature and the distinct types of systems *coloidales. D4 Explain the nature and the distinct typ	Explain the hypotheses, the consequences and the fundamental results of the Molecular Kinetical Theory of the gases	C7 C14 C19 C23	D1 D3 D4
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D4		C19	D4
		515	D9

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and systems *coloidales.	C22	D6
	C26	D7
	C27	D8
	C28	D9
	C29	D14
		D15

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(*)Phenomena of surface	(*)Superficial tension. Structure of the solid surfaces. Adsorption on solid surfaces. *Fisisorción And *quimisorción: models. The *interfase energised.		
(*)Kinetical formal	(*)Speed of reaction and equations of speed. Analysis of data. Kinetical analysis of complex reactions. Mechanisms. Influence of the temperature in the speed of reaction.		
(*)Experimental methods in Kinetical Chemical	(*)Transformation of the equations of speed. Conventional technicians. Experimental technicians for the study of fast reactions.		
(*)Theoretical interpretation of the speed of reaction.	(*)Theory of collisions for reactions *bimoleculares. Theory of the state of transition.		
(*)Macromolecules.	(*)Structure of the macromolecules. Structural models. Characterisation of macromolecules.		
(*)Colloids.	(*)Classification of the systems *coloidales. Synthesis and characterisation of colloids. Stability of systems *coloidales.		
(*)*Catálisis.	(*)General mechanism of the *catálisis. *Catálisis *homogénea. *Catálisis Heterogeneous.		
(*)Kinetical *electródica.	(*)Stages of a process *electródico. *Sobrepotenciales. *Sobrepotencial Of transfer of load. *Sobrepotencial Of diffusion. *Sobrepotenciales Of reaction and crystallisation. Experimental technicians.		
(*)Practical.	(*)Experiences of Kinetical Chemical including *Catálisi, Phenomena of Transport, Electrochemical Macromolecules and Colloids.		

Planning			
	Class hours	Hours outside the classroom	Total hours
Master Session	26	0	26
Seminars	13	65	78
Laboratory practises	45.5	32.5	78
Short answer tests	1	5	6
Short answer tests	1	5	6
Long answer tests and development	3	15	18
Reports / memories of practice	0	6	6
Troubleshooting and / or exercises	0	7	7
*The information in the planning table is for g	guidance only and does no	ot take into account the het	erogeneity of the students.

1ethodologies	
	Description
Master Session	Lesson by the method *expositivo *desarrolada in a classroom. They can pose simple exercises *directamentamente related *on the explanation.
Seminars	Approach, analysis and discussion of problems and questions of some complexity.
Laboratory practises	Practices of laboratory in the usual format

Personalized attention			
Methodologies	Description		
Master Session	Resolution of doubts on the proportionate explanations in classes.		
Seminars	Resolution of doubts on the proportionate explanations in classes.		
Laboratory practises	Resolution of doubts on the proportionate explanations in classes of laboratory		
Tests	Description		
Reports / memories of practice	Resolution of doubts on the preparation and preparation of reports of laboratory.		

Assessment				
	Description	Qualification	Traini Leai Res	ng and ming sults
Seminars	It values presentation and discussion of exercises *entregables	20	C7 C14 C19 C23	D1 D6 D7 D14
Laboratory practises	Realisation of practices of laboratory; when finalising the practices will realise a short proof on the concepts in which they base the same.	15	C19 C20 C21 C22 C23 C26 C27 C28 C29	
Short answer tests	Qualification of consistent short proof in questions or short problems	10	C7 C14 C19 C23	D1 D7
Short answer tests	Qualification of the second consistent short proof in questions or short problems.	10	C7 C14 C19 C23	D1 D7
Long answer tests and development	Qualification of the final examination. Questions and numerical problems.	40	C7 C14 C19 C23 C28	D1 D7
Reports / memories of practice	Qualification of the report of practices, calculations, presentation of results and discussion of the same.	5	C19 C20 C21 C22 C23 C28 C29	

Other comments on the Evaluation

- The assistance to masterclasses, seminars and the realisation of the practices and the delivery of the corresponding reports is compulsory.

The notes of the seminars and practical of laboratory will keep for the second evaluation. Under special circumstances, could require the preparation of "entregables" to improve the qualification obtained during the first evaluation.

The minimum note of the "official" (long) exam will be of 3.8 (in scale 0-10, 1.52 in scale 0-4) and of 3.0 (scale 0-10) in the short ones, so that the final grade will be an average (with the corresponding percentage) of the punctuations of all sections. To pass the topic, the global half punctuation has to be, of course, the same or higher than 5.0. There is not minimum punctuations in other sections, but presentation and discussion of exercises during the seminars will be important.

Sources of information
I.N. LEVINE, Physical Chemistry, 6ª,
P.W. ATKINS y J. DE PAULA, Physical Chemistry , 10ª,
T. ENGEL y P.J. REID, Physical Chemistry , 3ª,
K. J. LAIDLER, Chemical Kinetics , 3ª,
A. HORTA, Macromoléculas (2 vols) , 2ª,
S. SENENT, Química Física II , 3ª,
J. Bertrán y J. Núñez (coords.), Química Física (2 vols) , 1ª,

Recommendations

Subjects that are recommended to be taken simultaneously

Analytical chemistry 3/V11G200V01601 Inorganic chemistry II/V11G200V01604

Subjects that it is recommended to have taken before

Physical chemistry I/V11G200V01303 Physical chemistry II/V11G200V01403