



IDENTIFYING DATA

Inorganic chemistry I

Subject	Inorganic chemistry I			
Code	V11G200V01404			
Study programme	(*)Grao en Química			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	9	Mandatory	2nd	2nd
Teaching language	Spanish			
Department				
Coordinator	García Bugarín, Mercedes			
Lecturers	Bolaño García, Sandra Carballo Rial, Rosa Couce Fortúnez, María Delfina García Bugarín, Mercedes			
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General description	In this *asignatura studies the chemistry of the elements of the main groups and his compounds. It pretends give an overview of the different types of chemical behaviour and of the existent compounds			

Competencies

Code	
C1	Demonstrate knowledge and understanding of essential facts, concepts, principles and theories: Major aspects of chemical terminology, nomenclature, units and unit conversions.
C2	Demonstrate knowledge and understanding of essential facts, concepts, principles and theories: types of chemical reactions and its main characteristics
C9	Demonstrate knowledge and understanding of essential facts, concepts, principles and theories: characteristic properties of the elements and their compounds, including group relationships and variations in the periodic table
C12	Demonstrate knowledge and understanding of essential facts, concepts, principles and theories: structural features of chemical elements and their compounds, including stereochemistry
C14	Demonstrate knowledge and understanding of essential facts, concepts, principles and theories: relationship between macroscopic properties and properties of individual atoms and molecules, including macromolecules
C20	Evaluate, interpret and synthesize data and chemical information
C23	Present oral and written scientific material and scientific arguments to a specialized audience
C25	Handle chemicals safely, considering their physical and chemical properties, including the evaluation of any specific risks associated with its use
C26	Perform common laboratory procedures and use instrumentation in synthetic and analytical work
C27	Monitor, by observation and measurement of physical and chemical properties, events or changes, and document and record them in a consistent and reliable way
C28	Interpret data derived from laboratory observations and measurements in terms of their significance and relate them to the appropriate theory
D1	Communicate orally and in writing in at least one of the official languages of the University
D3	Learn independently
D4	Search and manage information from different sources
D5	Use information and communication technologies and manage basic computer tools
D6	Use mathematics, including error analysis, estimates of orders of magnitude, correct use of units and data representations
D7	Apply theoretical knowledge in practice
D8	Teamwork
D9	Work independently
D12	Plan and manage time properly
D13	Make decisions
D14	Analyze and synthesize information and draw conclusions
D15	Evaluate critically and constructively the environment and oneself

Learning outcomes		
Expected results from this subject	Training and Learning Results	
Distinguish the different chemical behaviour of the elements of the main groups inside each group.	C1 C2 C9	D1 D3 D4 D9
Choose the general method more adapted for the obtaining of the elements of the main groups from his present compounds in the nature.	C1 C2 C9	D1 D3 D4 D9
Identify in each group of elements of the main groups those types of singular compounds and of particular importance by his structure or his reactivity.	C1 C2 C9 C12 C14	D1 D3 D4 D9
Deduce the physical properties of a compound from the type of link between his components and his structure.	C9 C12 C14 C20 C23	D1 D3 D4 D9
Relate the physical and chemical properties of the elements of the main groups and of his compounds with his applications.	C2 C9 C12 C14 C23	D1 D3 D4 D9
Carry out in the laboratory the preparation and the study of some physical and chemical properties of elements of the main groups and of his compounds.	C25 C26 C27 C28	D4 D5 D6 D7 D8 D9 D12 D13 D14 D15

Contents

Topic	
1. Hydrogen	Obtaining. Physical and chemical properties. Hydrides: classification and general study of the same. The water.
2. Noble gases	General characteristics. Properties and uses. Fluorides of xenon. Combinations of xenon with oxygen.
3. *Halógenos	General characteristics. Obtaining, properties and reactivity. Halides. Oxides, *oxoácidos and *oxosales. Compound *interhalógenos and ions *polihalogenuro. *Pseudohalógenos. *Fluorocarbonos.
4. Elements of the group 16	General characteristics. Specific study of the oxygen. Obtaining, properties and reactivity. Peroxide of hydrogen. Sulphur. Obtaining, properties and reactivity. Combinations hydrogenated and *halogenadas of the sulphur. Oxides, *oxoácidos and *oxosales of sulphur.
5. Elements of the group 15	General characteristics. Obtaining, properties and reactivity. Combinations hydrogenated and *halogenadas. Oxides, *oxoácidos and *oxosales of nitrogen and phosphorus. Arsenic and bismuth.
6. Elements of the group 14	General characteristics. Carbon. Obtaining, properties and reactivity. Oxides and carbonates. Carbides. Combinations *halogenadas and nitrogenous. Silicon, germanium, tin and lead. Obtaining, properties and reactivity. Hydrides and halides. Oxides. Silicates. Silicones.
7. Elements of the group 13	General characteristics. Boron. Obtaining, properties and reactivity. Hydrides and halides. Composed with nitrogen. Oxides, *oxoácidos and *oxosales. Aluminium. Obtaining, properties and reactivity. Chemistry in aqueous dissolution of the *ion aluminium. Hydrides, halides and oxides. Compounds more important of gallium, Indian and *talio.
8. Elements of the group 1	Physical and chemical properties. Reactivity. Obtaining. Compounds more important.
9. Elements of the group 2	Physical and chemical properties. Reactivity. Obtaining. Compounds more important.
Practice 1-2	Study of the chemical properties of the oxides.

Practice 3-4	Obtaining and chemical behaviour of the *halógenos.
Practice 5-6	Obtaining and reactivity of compounds of the group 16.
Practice 7-8	Obtaining and reactivity of compounds of the group 15.
Practice 9	Obtaining and reactivity of compounds of the group 14.
Practice 10-11	Obtaining and reactivity of compounds of the group 13.
Practice 12	Practice to determine

Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	26	15	41
Troubleshooting and / or exercises	26	23	49
Laboratory practises	42	6	48
Long answer tests and development	4	70	74
Practical tests, real task execution and / or simulated.	3	10	13

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

Methodologies

	Description
Master Session	Exhibition by part of the professor on the subject to develop, doing special emphasis in the most important appearances or of difficult understanding for the student. The professor/to will use the platform *Tem@ to give information on the matter or on his development.
Troubleshooting and / or exercises	They will devote two weekly hours to argue and resolve questions on the matter that previously the student will have to work.
Laboratory practises	The experiments will realise along 12 sessions of 3,5 hours each one. The student will have of the scripts of practices as well as of the material of support in the platform *tem@ with the end that it can have previous knowledge of the experiments to realise. The student will have to elaborate the fascicle of laboratory during the realisation of the practices.

Personalized attention

Methodologies	Description
Troubleshooting and / or exercises	

Assessment

	Description	Qualification	Training and Learning Results
Troubleshooting and / or exercises	It will value the resolution by part of the student of a series of problems and/or exercises proposed in the time/condition established/ace by the professor. The punctuation will be considered if in each one of the eliminatory proofs reaches an equal or upper qualification to 5 points on 10.	15	C1 D1 C2 D3 C9 D4 C12 D6 C14 D7 C23 D9 D13
Laboratory practises	It is compulsory the assistance to the sessions of laboratory. The professor will realise a follow-up of the experimental work realised by the student in the sessions of laboratory, as well as of the fascicle elaborated (10%). It will realise a proof that will allow to evaluate the competitions and skills purchased by the student (15%). The punctuation will be considered if in each one of the eliminatory proofs reaches an equal or upper qualification to 5 points on 10.	25	C25 D4 C26 D5 C27 D6 C28 D7 D8 D9 D12 D13 D14 D15
Long answer tests and development	2 Proofs on concrete appearances of the contents explained in class and seminars. Each proof will be able to be eliminatory when the student reach a minimum qualification of 5 points on 10. To be able to approve the matter, the student will have to reach in each one of the eliminatory proofs a minimum qualification of 5 points on 10.	60	C1 D1 C2 D6 C9 D7 C12 C14 C20

Other comments on the Evaluation

The assistance to the theoretical classes, practices of laboratory and seminars is compulsory. The participation of the

student in any of the acts of evaluation of the matter will involve the condition of "presented/to" and, therefore, the allocation of a qualification. They consider acts of evaluation the assistance to the practical classes of laboratory (three or more) and the realisation of proofs. The students will be able to realise a Final Proof, that will be able to have a value of until a 60 %, in the date of closing of evaluation of the announcement of May-June when they require:

- Surpass any of the eliminatory proofs.
- Go up the note of the eliminatory proofs that allow him reach the minima required to approve the matter.
- Go up the note in the eliminatory proofs to improve the final note of the matter.

Announcement of Julio. The students that do not surpass the matter at the end of the *cuatrimestre will have to do a proof written in the period of closing of evaluation of the announcement of July. Said proof will substitute the results of the eliminatory proofs realised along the *cuatrimestre and will have a value of until a 60 %. The qualification of resolution of problems and practical of laboratory obtained to along the *cuatrimestre keeps .

Sources of information

Basic Bibliography

RAYNER-CANHAM, G., **Química Inorgánica Descriptiva**, 2.ª Ed,

SHRIVER & ATKINS, **Química Inorgánica**, 4ª ed.,

Complementary Bibliography

ATKINS, P.; OVERTON, T.; ROURKE, J.; WELLER, M. Y ARMSTRONG, F., **Inorganic Chemistry**, Fifth Edition,

HOUSE, J. E., **Inorganic Chemistry**, 2ª Ed,

HOUSECROFT, C.E. Y SHARPE, A. G., **Inorganic Chemistry**, 3ª Ed,

HOUSECROFT, C. E. ; A. G. SHARPE., **Química Inorgánica**, 2.ª Ed (español),

RAYNER-CANHAM, G., OVERTON, T., **Descriptive Inorganic Chemistry**, 6ª Ed,

Recommendations

Subjects that are recommended to be taken simultaneously

IT tools and communication in chemistry/V11G200V01401

Numerical methods in chemistry/V11G200V01402

Physical chemistry II/V11G200V01403

Subjects that it is recommended to have taken before

Chemistry, physics and biology: Integrated laboratory I/V11G200V01103

Chemistry, physics and geology: Integrated laboratory II/V11G200V01202

Chemistry: Chemistry I/V11G200V01105

Chemistry: Chemistry 2/V11G200V01204