



## IDENTIFYING DATA

### Chemistry, physics and geology: Integrated laboratory II

Subject	Chemistry, physics and geology: Integrated laboratory II			
Code	V11G200V01202			
Study programme	(*)Grao en Química			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Basic education	1st	2nd
Teaching language	Spanish			
Department				

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General description	"Machine translation into english of the original teaching guide" In this matter students will apply in a more specific way the criteria and practical skills learnt in the matter Integrated Laboratory I. Students will carry out diverse experiments that will allow them to work in more specialized laboratories. There will be a focus on the observation and preparation of a laboratory notebook as well as in the realisation of a final report of the work carried out.			

## Competencies

Code	
A5	Students have developed those learning skills that are necessary for them to continue to undertake further study with a high degree of autonomy
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
C29	Demonstrate skills for numerical calculations and interpretation of experimental data, with special emphasis on precision and accuracy
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		
Analyse as they affect the speed of distinct reaction factors, as for example the nature of the reagents, the concentration of the same, the presence of a catalyst or the temperature.	A5	C28	D3 D7 D9 D13 D14
Distinguish a galvanic cell of a *célida electrolytic and know build both types of cells.	A5	C25 C28	D1 D3 D4 D7 D8 D12 D13 D14 D15
Reproduce basic experiences in physics with the aim to show or apply some of the basic laws.	A5	C27 C28 C29	D4 D6 D7 D8 D9 D13 D14 D15
Apply the knowledge and the skills purchased the resolution of simple problems of separation, purification and characterisation of chemical compounds.	A5	C25 C26 C27 C28	D1 D3 D4 D7 D9 D12 D13 D14
Handle different *equipación *comun in the laboratory of Physics and Chemical: *polímetro, sources of feeding, oscilloscope, etc	A5	C26 C27 C29	D6 D14
Adjust the experimental conditions for a chemical process (temperature, agitation, etc.).	A5	C26 C27 C28	D3 D7 D8 D13
Handle properly the molecular models for the representation of organic and inorganic compounds	A5	C28	D1 D3 D7 D9 D12 D13 D14
Carry out the *síntesis of organic and inorganic substances simple	A5	C25 C26 C27 C28	D1 D3 D4 D9 D12 D13 D14 D15
Use programs of diffraction and interpret images of electronic microscopy differentiating the structural information (*HREM, *SAED) and the morphological (SEM)	A5	C28	D1 D3 D4 D5 D7 D8 D14

## Contents

## Topic

- Galvanic and electrolytic cells. Utilisation of the equation of \*Nernst. (2 sessions)
- Technical of separation: solid extraction-liquid and chromatography in fine layer. (1 session)
- Technical of separation: chromatography in fine layer and chromatography in column. (1 session)
- chemical Balance: Study of the balance of dissociation by methods \*conductimétrico and \*potenciométrico (1 session)
- Kinetical chemical: kinetical Study of a chemical reaction (2 sessions)
- Law of Lambert-\*Beer: Determination of the concentration of a \*colorante by means of spectroscopy (1 session)
- Equation of state of the ideal gases (1 session)
- Modelling of simple inorganic molecules. (1 session)
- Representation of organic molecules: molecular models. (1 session)
- Obtaining of simple inorganic compounds. (2 sessions)
- Obtaining of simple organic compounds. (1 sessions)
- Obtaining of organic polymers. (1 session)
- Introduction to the morphological study and \*microestructural of the half crystalline: Analysis \*mineralógico by means of \*microscopía optical with light polarised (2 sessions)
- Introduction to the technicians of crystalline growth in the laboratory: methods of creation of the supersaturation and training of \*monocristales. Polymorphism. Growth of glasses in \*geles (1 session)
- Determination of the resistance specifies of a driver. (1 session)
- Law of Ohm: circuits of continuous current. (1 session)
- \*Calibración of a thermistor. (1 session)
- Phenomena of electromagnetic induction: currents induced, laws of Faraday and \*Lenz. \*Tranformador. (1 session)
- Theorem of transfer of maximum power in a circuit. (1 session)

## Planning

	Class hours	Hours outside the classroom	Total hours
Laboratory practises	72	40	112
Outdoor study / field practices	8	10	18
Short answer tests	2	6	8
Practical tests, real task execution and / or simulated.	3	9	12

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

## Methodologies

	Description
Laboratory practises	They will realise practices of laboratory in sessions of 3 hours each one. The student/will have it of the scripts of practices, as well as of the material of support in the platform *FAITIC, so that it can have previous knowledge of the experiments to realise.
Outdoor study / field practices	Each student of individual way elaborates a document on the subject of the practice of field.

## Personalized attention

Methodologies	Description
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Laboratory practises	Time devoted by the professor to attend all the doubts and questions posed by the student/the along the course. The student will consult with *profesorado the explanations that estimate timely to be able to comprise better the matter and develop successfully the tasks that were him proposed. These queries will attend in the schedule of *titorías.
Outdoor study / field practices	The student will consult with *profesorado the explanations that estimate timely to be able to comprise better the matter and develop successfully the tasks that were him proposed

## Assessment

	Description	Qualification	Training and Learning Results
Laboratory practises	<p>The professor will realise the follow-up of the experimental work realised by the student/the in the sessions of laboratory, as well as of the fascicle elaborated. Since it treats of a matter of experimental type, is compulsory the assistance to the sessions of laboratory. It is important to indicate that the no assistance will be penalised in the final note. Yes the number of absences without justifying is upper to 2, will suppose to suspend the matter. If the number of absences justified, and owed the causes of greater strength, is upper to 6 will suppose to suspend the matter. The days that are missing will compute like zeros in the note of laboratory.</p> <p>In the punctuation of this section will earn special importance the following points:</p> <ul style="list-style-type: none"> <li>-As *deenvuelve the student in the laboratory, including his degree of autonomy.</li> <li>-As it solves the problems that pose him the hour to do the practice.</li> <li>-Which is his command of the necessary previous knowledges to realise the practice.</li> <li>-Cleaning and treatment of the material.</li> <li>-Command of the necessary calculations to realise the practice.</li> <li>-Preparation of fascicle/inform of laboratory.</li> </ul>	40	A5 C25 D1 C26 D3 C27 D4 C28 D5 C29 D6 D7 D8 D9 D12 D13 D14 D15
Outdoor study / field practices	It will realise a memory on the subject of the practice of field. The assistance is compulsory to be able to be evaluated.	10	A5 C27 D1 C28 D7 D14 D15
Short answer tests	It will realise a proof written (of brief answer) relative to concrete appearances of the operations realised in the laboratory.	25	A5 C28 D1 C29 D6 D7 D14
Practical tests, real task execution and / or simulated.	It will realise a practical proof (session of laboratory) that will allow to evaluate the competitions and skills purchased by the student/the. Said proofs will be realised of independent form for each group of practices.	25	A5 C25 D1 C26 D7 C28 D9 D12 D13 D14

## Other comments on the Evaluation

To be evaluated the student has to obtain a minimum note in some of the distinct sections that comprises the evaluation, this minimum note is of 3.5 in the theoretical and practical proofs and in the exit of field, and of 4 in the assessment of the practices of laboratory. The assistance to more than two practical sessions will involve that the student already is being evaluated, therefore, his qualification will not be able to be "No Presented". In the second announcement the evaluation will carry out of the following way: A theoretical proof-practical in which they will evaluate the results of the learning of the student: 50 %. Will conserve the punctuation reached by the student during the course; in the following sections: follow-up of the work of laboratory (40%) and practical of field (10%).

## Sources of information

P. Atkins, L. Jones, **Principios de Química**, 3ª,  
R.H. Petrucci, W.S. Harwood, F.G. Herring, **Química General**, 8ª,  
C. Hammond, **The Basic of Crystallography and Diffraction**, 2ª,  
I.N. Levine, **Fisicoquímica**,

M.A. Martínez Grau, A.G. Csásky, **Técnicas Experimentales en Síntesis Orgánica**,  
D. P. Shoemaker, C.W. Garland, J.W. Nibler, **Experiments in Physical Chemistry**, 8<sup>a</sup>,  
P.A. Tipler. G. Mosca, **Física para la ciencia y la Tecnología**,  
Chang, Raymong, **Chemistry**, 7<sup>a</sup>,  
L.G. Wade, **Química Orgánica**, 7<sup>a</sup>,

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## **Recommendations**

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### **Subjects that are recommended to be taken simultaneously**

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Physics: Physics II/V11G200V01201

Geology: Geology/V11G200V01205

Mathematics: Mathematics II/V11G200V01203

Chemistry: Chemistry 2/V11G200V01204

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### **Subjects that it is recommended to have taken before**

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Biology: Biology/V11G200V01101

Physics: Physics I/V11G200V01102

Mathematics: Mathematics I/V11G200V01104

Chemistry, physics and biology: Integrated laboratory I/V11G200V01103

Chemistry: Chemistry I/V11G200V01105

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